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OR

MANUFACTURERS RECORD

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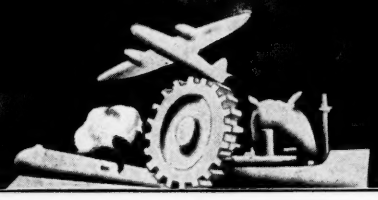


STACKS

Deeds Not Words

Our Nation must be run on democratic principles in war as in peace.

Our Nation has been fed on changing promises to the point where all thoughtful men doubt everything they read or hear that emanates from Washington.

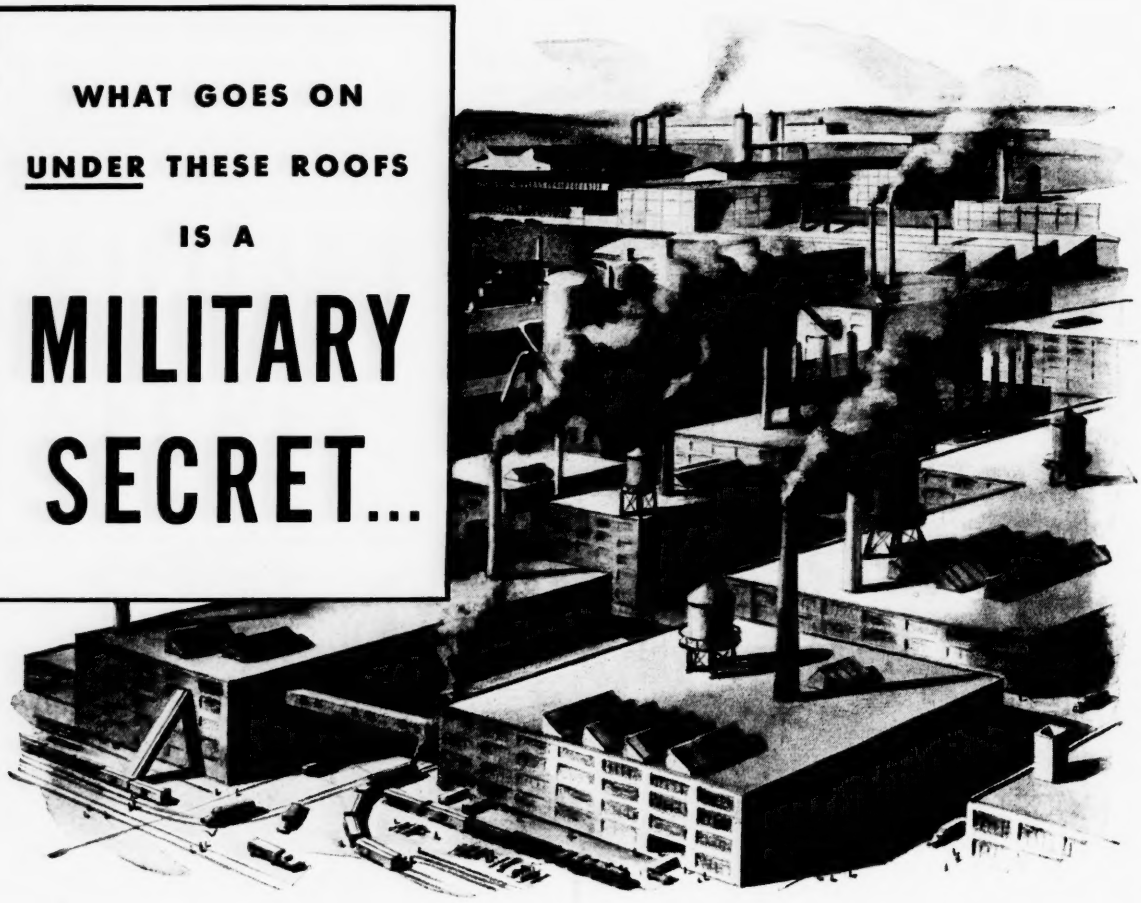
Our Nation needs Deeds based on thought, not words phrased for popular consumption.

WHAT GOES ON

UNDER THESE ROOFS

IS A

MILITARY SECRET...



BUT IT'S NO SECRET THAT

Celotex Bonded Built-Up Roofs

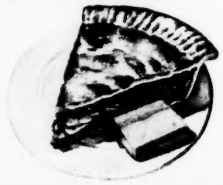
PROVIDE YEARS OF TROUBLE-FREE PROTECTION!

INDUSTRIAL builders agree on this rule: When you put on a roof, put on a *good* roof! There's real economy in the long, trouble-free protection afforded by a Celotex Bonded Built-Up Roof, available with 10, 15, or 20-year bond—your written guarantee of freedom from repair expense for a definite period of years!

Celotex Bonded Built-Up Roofs are well known to industry. They meet Celotex world-famous standards of quality in every respect. That is why they have been chosen to guard vital war plants in all parts of America. When a contractor is licensed to apply Celotex Built-Up Roofing Products, you may rest assured that he knows his business thoroughly and well.

"Go Together Like Apple Pie and Cheese"

Before you sign a contract, investigate the advantages of using Celotex Vapor-seal Roof Insulation in combination with a Celotex Bonded Built-Up Roof. They go together like apple pie and cheese—give you the benefit of centralized responsibility—because both are products of the same responsible manufacturer. Mail the coupon!



CELOTEX

REG. U. S. PAT. OFF.

ROOFING • INSULATING BOARD • ROCK WOOL
GYPSUM WALLBOARD • LATH • PLASTER
ACOUSTICAL PRODUCTS

THE CELOTEX CORPORATION • CHICAGO

THE CELOTEX CORPORATION, CHICAGO MR 4-14-43

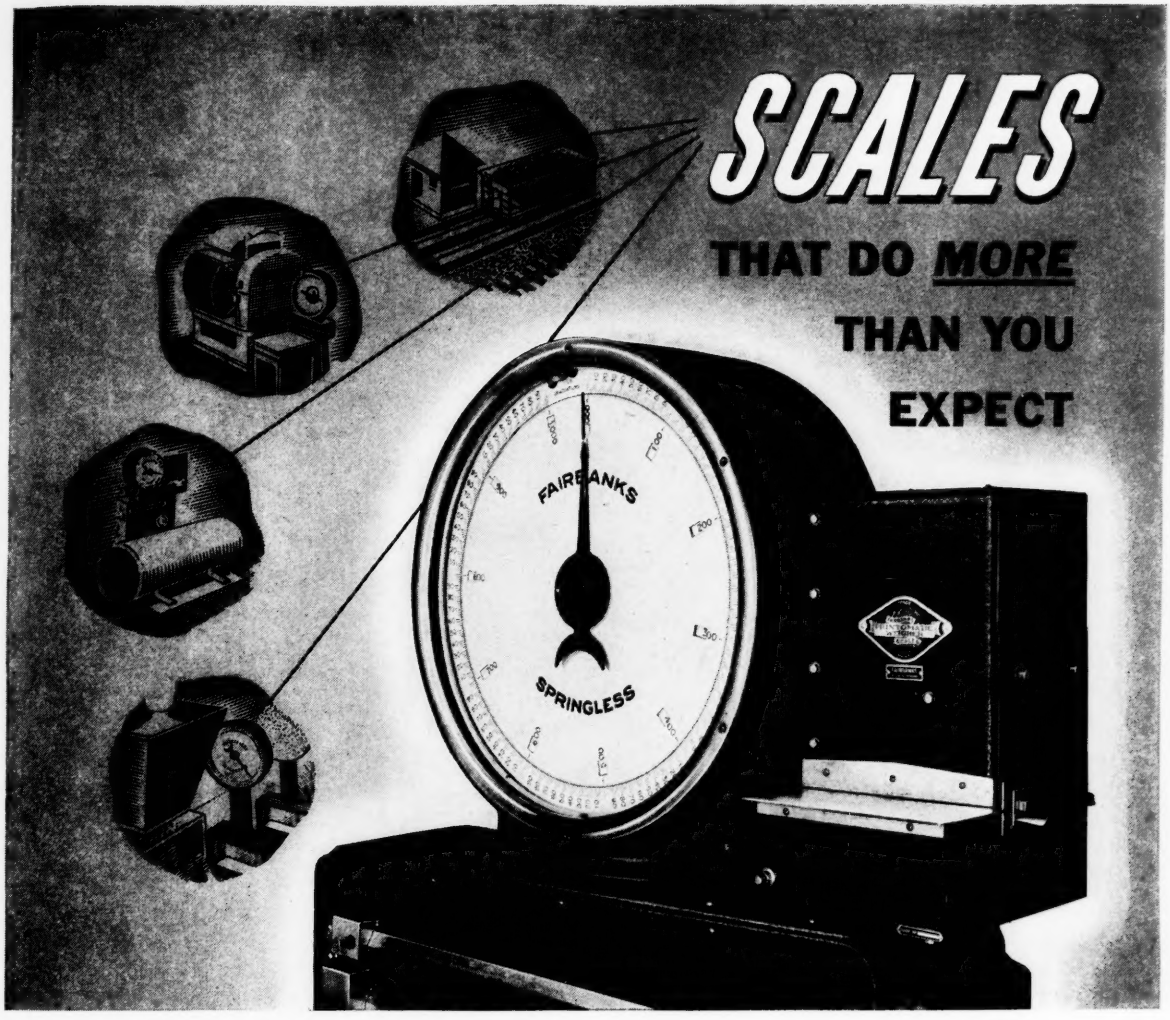
Please send complete information on Celotex Bonded Built-Up Roofs and Celotex Vapor-seal Roof Insulation.

Name .....

Address .....

City .....

County ..... *State* .....



OF course, Fairbanks Scales are big, husky, and accurate. You have a right to expect these things in *any* good scale—and particularly of Fairbanks Scales with the world's broadest scale manufacturing experience behind them.

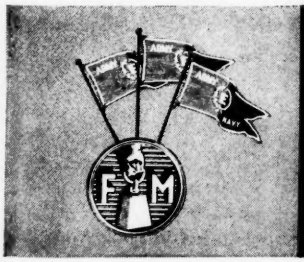
The feature about Fairbanks Scales that may surprise you the most, is their ability to do things you *don't* expect of scales.

Here are a few of many jobs done by Fairbanks Scales:

- They count small parts—more accurately than manual counting
- They weigh carloads of coal in motion and make a printed record of each weight
- They automatically control paint ingredients
- They automatically control aggregates
- They "keep the books" in steel plants, making printed records of incoming and outgoing shipments
- They keep accurate records on chlorination in water treatment
- They record the *flow* of liquid chemicals
- They guard secret formulas in compounding
- They control batching in bakeries
- They prevent disputes by eliminating the human element in weighing.

AND all of these things, only the beginning of the story, they do automatically and mechanically thereby eliminating human errors.

How Fairbanks Scales can be fitted into your production flow to speed up operations and eliminate errors may prove to be the most interesting discovery you ever made. Investigate now. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Illinois.



FAIRBANKS-MORSE

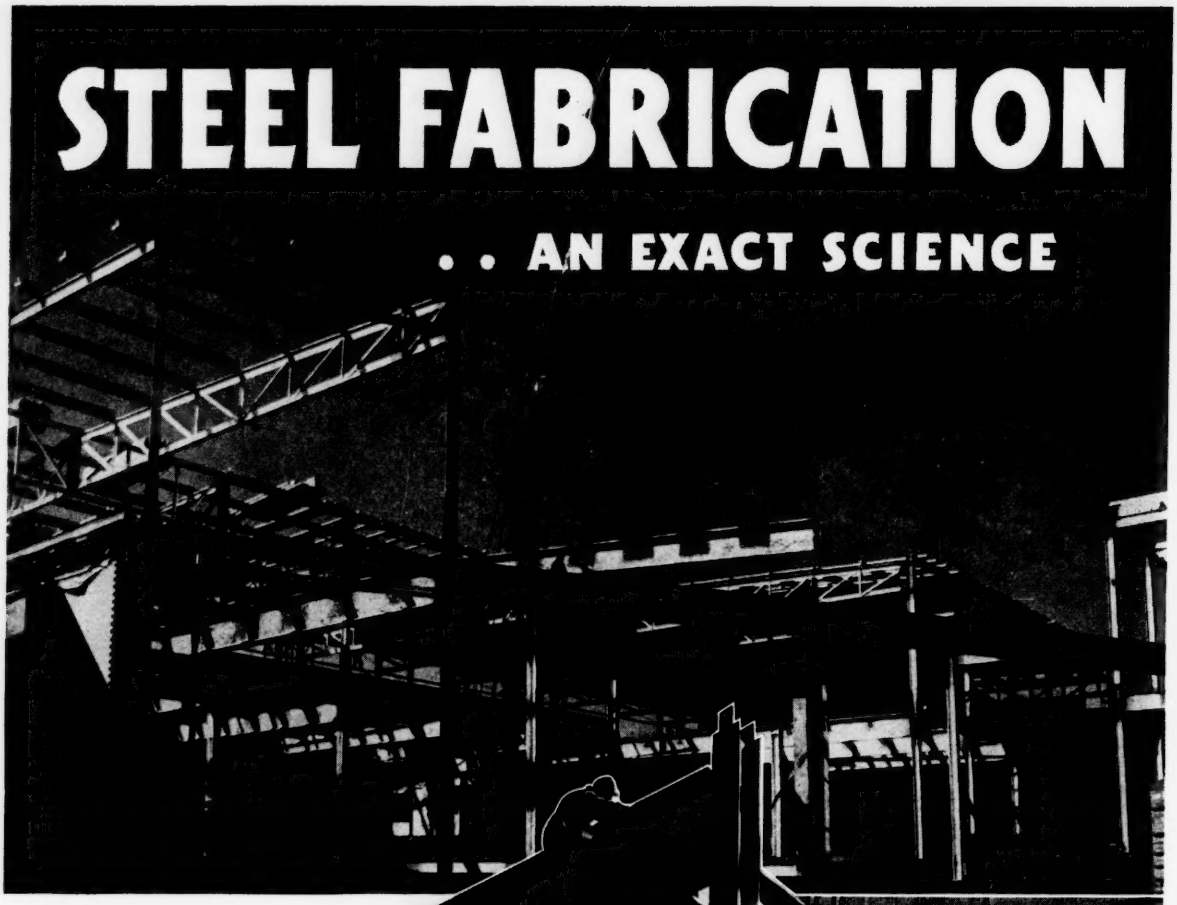
DIESEL ENGINES
PUMPS
MOTORS
GENERATORS
SCALES

WATER SYSTEMS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS
RAILROAD EQUIPMENT

Scales

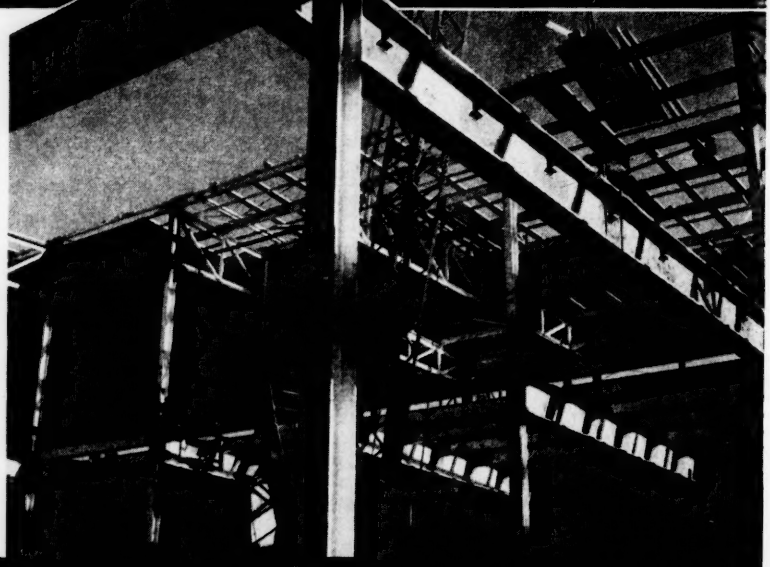
STEEL FABRICATION

. . AN EXACT SCIENCE



A great advantage of steel construction lies in its flexibility, but that doesn't mean you can stretch structural members to fit. Achieving the fit is a job for the fabricator, interpreting in steel the specifications supplied by the engineers . . . Ingalls — the nation's largest independent fabricator of structural steel—prides itself on making every job as nearly as humanly possible a "perfect fit," thereby insuring a minimum of cutting, drilling, etc., on the erection job.

Our two large fabricating plants, strategically located at Birmingham and Pittsburgh, permit many economies, save time and expense of deliveries. Completely-staffed engineering and erecting services are ready to serve you on any war project now and on all peacetime construction after the war is won.



THE **INGALLS** IRON WORKS COMPANY

BIRMINGHAM, ALABAMA

Subsidiary Companies and Divisions

THE STEEL CONSTRUCTION COMPANY • THE INGALLS SHIPBUILDING CORPORATION • BIRMINGHAM TANK COMPANY

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MANUFACTURERS RECORD

Established 1882

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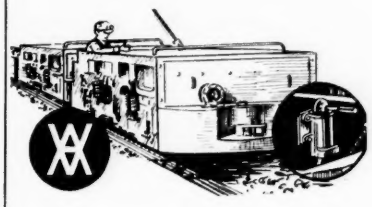
Westinghouse...

HYDRAULIC BRAKES



Increase...

Haulage Capacity of Small Locomotives

Developed for mine and plant yard haulage units on which space limitations preclude use of compressed air brake apparatus, the Westinghouse Hydraulic Brake provides more suitable control than afforded by the usual hand brake.

Manipulation is simple, effortless, and precise. It responds instantly by a mere touch on the operating handle to supply any desired braking intensity. Graduations on or off in small increments can be made at will.

This fast and flexible operation facilitates spotting of cars at loaders — expedites movement over tracks of varying profile with uniform safety — reduces wear and tear on electrical apparatus and mechanical elements, as it eliminates the need for motor "bucking" or dragging brake shoes to check speed. Tandem operation is facilitated, as the brakes on both locomotives — permanently coupled — can be operated from the head unit.

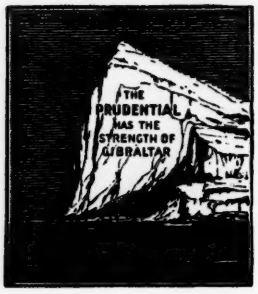
This new equipment — a valuable means to increase haulage capacity — is a simple, compact system, easily installed on small locomotives, new or old . . . Complete information and price will be furnished upon request.

Westinghouse . . . .
AIR BRAKE CO.
Industrial Division
PITTSBURGH, PA.

Simple and Sure

The greater the percentage of life insurance in a man's estate, the simpler the problem for his heirs.

Add to your estate through one of our low-premium policies



The Prudential
Insurance Company of America
Home Office, NEWARK, N. J.

Thoughts for the Thoughtful

An agreement signed by Governor Stevenson of Texas and officers of important labor unions in that state flatly declares "There will be no strikes, slowdowns, lockouts or work stoppages of any nature in the State of Texas for the duration of the war." If this agreement is violated the Governor has the pledged approval of the signers to do "anything and everything within his power as Governor of Texas to stop or prevent such an interference with the war effort."

If we are going to preserve states' rights it is a good idea to have state statesmen. Texas is setting us a good example.

Private industry is annually spending hundreds of millions of dollars in its research laboratories for the creation and development of machines and goods that make our way of living unparalleled in world history.

When we contrast these marvels that private industry has conceived and evolved with the abysmal ignorance and the endless blunders that are portrayed to an anxious public by the inept bureaucrats in Washington we are appalled at the trend that is placing all of us, business men, workers and farmers, in the hands of theorists who now are not only planning (?) a national economy but an international WPA.

It is a grim fact that the Nation is in a life and death struggle with powerful and relentless enemies.

It is just as grim a fact that John Busarello, president-elect of the Pittsburgh district of the United Mine Workers says "Give the mine workers what is due them, because if you don't we'll take it."

It is a grim fact when Mr. James Mark, president of the central Pennsylvania district declares "We are out to get substantial wage increases and we are going to get them no matter what the consequences."

This is the sort of talk that enables Hitler to propound his propaganda. This is the sort of action, if carried into effect, is the same as holding a pistol to the heads of every soldier or sailor now in daily danger of his life.

"If this be treason, make the most of it."

"To talk of 'social security' to people whose sons and husbands are being killed or likely to be casualties of battle is a mockery. What the NRPB means is pensions.

• "This country is spending and giving at a rate which long continued will bleed it white; that is the case

and there is no use being mealy-mouthed about it.

"To have a decent standard of life, to say nothing of security, the American people in the post-war days will have to work and work hard. They will have to save and save hard.

"Anyone who tells them that a government can concoct a scheme which will save them from the rigors before them tells them a cruel lie."

—*Wall Street Journal.*

Fleet-McGinley, Inc., the company that prints the magazines that we publish along with a couple of scores of others posted on its bulletin board the other day the following notice. It is reprinted herewith in the hope that it may offer a suggestion of value to industrial managers everywhere.

To whom it may concern—

There have occurred in this and other plants what may have appeared to you to be inexcusable interruptions of work. It certainly does not appear on the surface to be efficient operation when we work long hours of overtime, and on Sundays and holidays, and then close down for a day or two waiting for materials or customer's instructions. Unless all the facts are known, these constant face-abouts may easily be interpreted as managerial blunders, poor planning, or even governmental inefficiency.

But we cannot operate, in war, on the basis to which we were accustomed in peace time. Sometimes schedule changes must be made in the middle of a day's production to meet an emergency requirement.

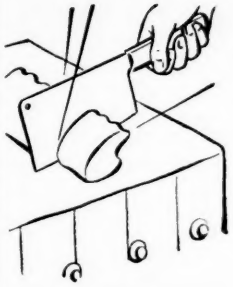
That is war. That is what we are all up against. But let us remember that the soldiers at the front cannot wait. When the boys in the foxholes are running low on munitions they can't take a few days off to wait for more. They must fire every gun as long as it will fire.

That is exactly what we on the production front must do—work to our utmost each day with all the resources at our command. Material shortage may have handicapped us yesterday; tomorrow the government might find it necessary to alter our entire program. But our job today is to be on the job, producing all we can the best we know how.

That is wartime efficiency. It may be different from the accepted standard of peacetime efficiency. But everyone must gear production to ever changing requirements—not to the convenience of those of us working safely at home.

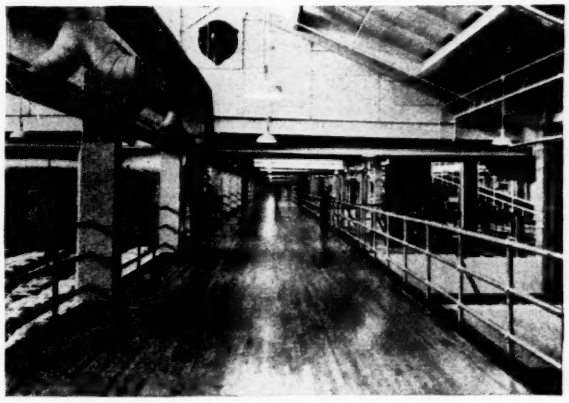
We do not believe in war any more today when our boys are in the service than we did twenty five years ago when we wore olive drab uniforms. Just the same, war is not an unalloyed earth-wide disease without its compensations.

Soldiers on the Philippines, sailors on life rafts, and marines on Guadalcanal have learned that it was worth while to acknowledge a Supreme Being in their hearts and have gained faith and comfort and courage by so doing.



BUTCHER BLOCK STAMINA

for Heavy-Duty Floors



National Biscuit Company, Atlanta Bakery floored with Northern Hard Maple. Photo, courtesy G. H. Tennant Co., Minn. Louis Wirsching, New York City, Architect.

Tough-Fibered, Tight-Grained Clean HARD MAPLE!

Watch your butcher working at his block! Those guillotine blows of his heavy cleaver are falling on Northern Hard Maple, the wood that's tough enough to "take it" and stay clean, wherever used and however hard the job.

Put the same tight-grained material in any floor subject to very heavy use. Add to it all the punishment such floors usually get! Hard Maple will easily stand up under it, over year after year of bright cleanliness, comfort under foot, and low cost of upkeep. Traffic moves safely, easily over Hard Maple's velvet-smooth, non-slippery surface.

There are so *many sound, logical reasons* for Northern Hard Maple floors in food plants, textile mills, stores, schools and other type buildings, including housing, that there is *good reason* to consider it first, for remodeling and reconstruction jobs. Hard Maple is available in strips or blocks. See Sweet's, Sec. 11/57.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1797 McCormick Building, Chicago, Illinois

Write for illustrated literature featuring grades, specifications, etc.

Floor *with*
MFMA Maple
(NORTHERN HARD)

Painting 150 feet in the air—hazardous work well done

• Working twenty-five years with great American industries . . . Ferguson men have the answers to your present engineering and construction problems. They are equipped to do your work, to your satisfaction, with one contract, one responsibility, and one profit.

The H.K. Ferguson Co.

ENGINEERS AND BUILDERS

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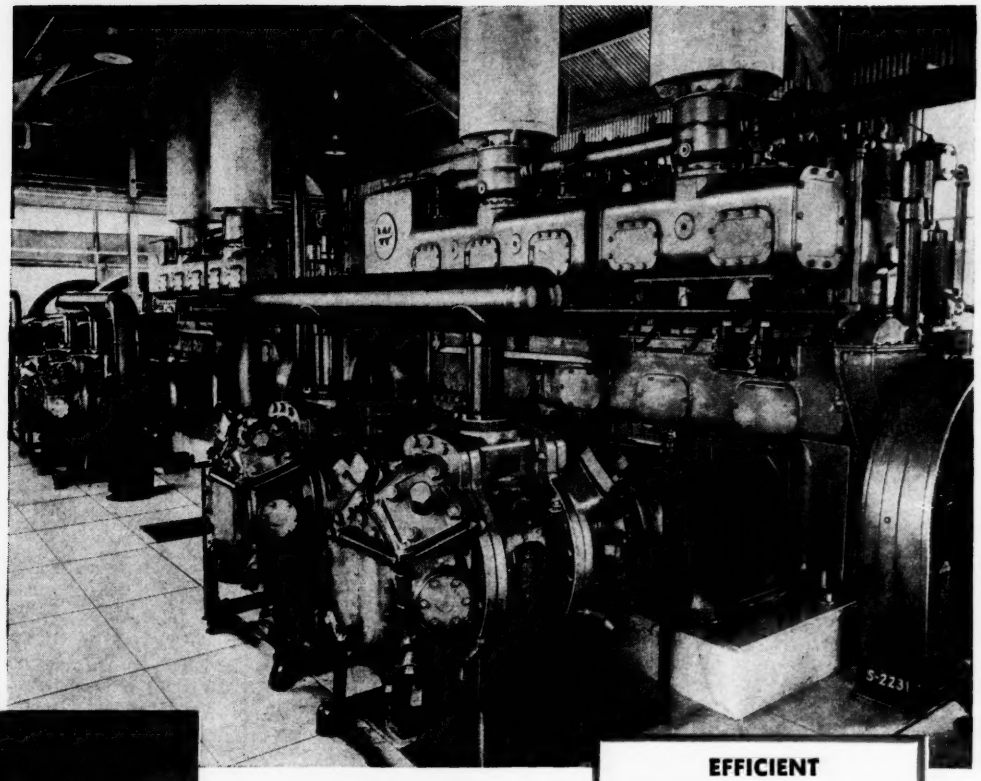


LTC

ANGLE GAS ENGINE-COMPRESSORS

IN THIS EQUIPMENT there is exemplified Worthington's half-century of research and experience in building compressors and internal combustion engines.

For refrigeration, air supply or gas compression, Worthington LTC units offer the solution to many major problems . . . by assuring uninterrupted operation over long periods, plus a term of life that is far beyond any current calculations.

Developed to meet the needs of the petroleum and gas industries, these LTC units are ready for other new and important war assignments.

FIVE SIZES . . . 400 TO 1000 HORSEPOWER

EFFICIENT

- **Twin ignition . . . Complete fuel combustion**
- **Pressure fuel injection . . . No waste to exhaust**
- **Feather valves . . . Quick acting, less slippage**
- **Large valve area . . . Higher efficiency**

ECONOMICAL

- **Low installation cost . . . Engine shipped completely assembled**
- **Low foundation cost . . . Small floor space**
- **Low building cost . . . Small cheap buildings adequate**
- **Low operating cost . . . In fuel and maintenance**

DEPENDABLE

- **Pressure lubrication . . . Reduces wear**
- **Low-tension ignition . . . Maintains spark intensity**
- **Gear drive . . . Positive timing for valves and ignition**
- **Complete combustion . . . Reduces operating temperatures**

WORTHINGTON

GC3-3A

WORTHINGTON PUMP AND MACHINERY CORPORATION · HARRISON, NEW JERSEY

Free book on Tool Steel and its Treatment

Here's a new book that will be of practical value to anyone who works with tool steel. It's called *Tool Steel Treaters' Guide* and is a "how-to" manual from start to finish.

You'll find in it specific information on how to forge, normalize, anneal, spheroidize, cool and harden tool steel. You'll find many clear, informative photographs on quenching, P-F fracture standards, hot-acid etching, and grain structure. Also, there are two full-color charts showing the actual heat and temper colors of steel, through the heating and tempering ranges.

One section of the book is devoted to definitions of some of the terms used in the steel industry—hundreds of items are defined, ranging from "Air-Hardening Steel" to "Yield Strength." These definitions should be particularly helpful to new men in war-production jobs involving the handling of steel.

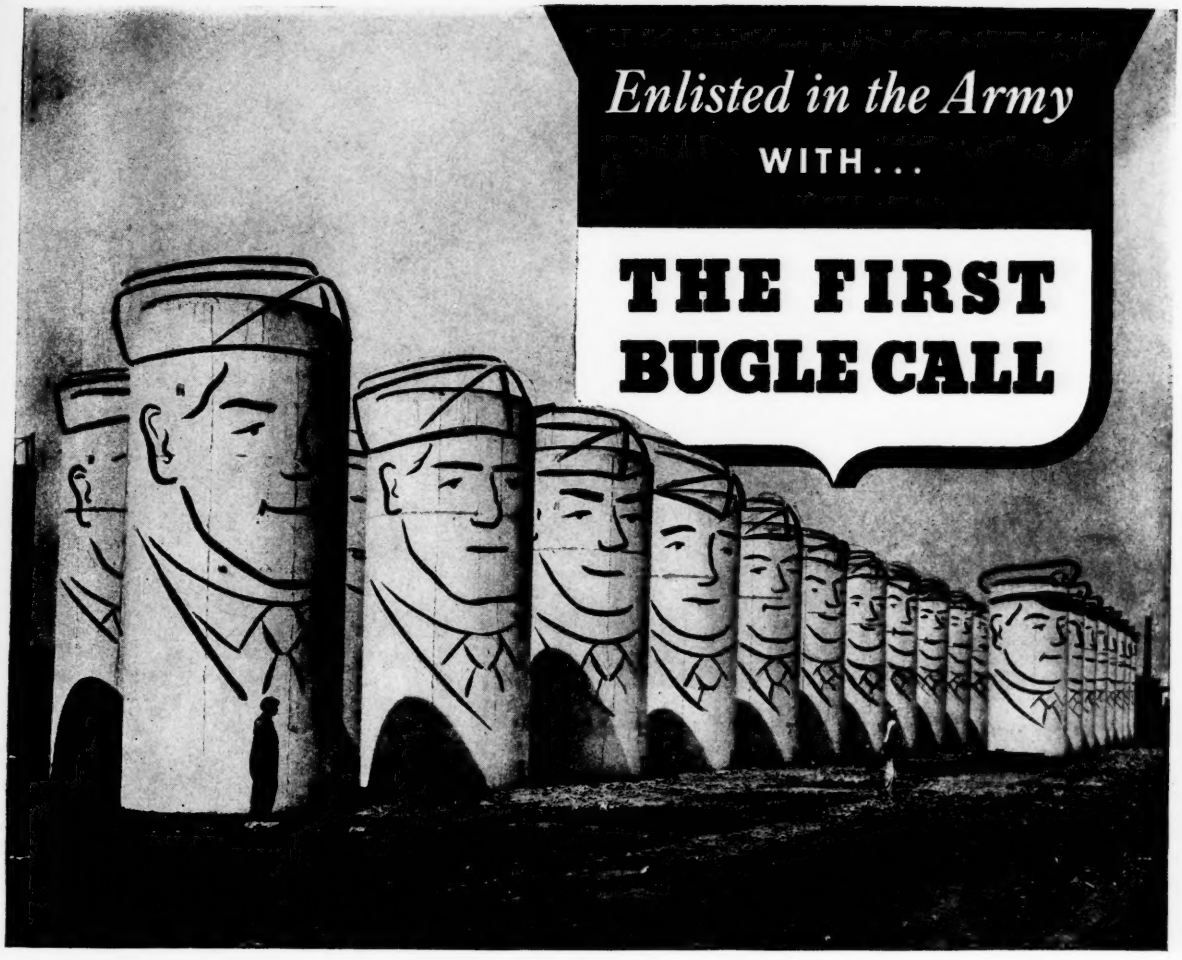
Another feature of the *Tool Steel Treaters' Guide* is its section of useful tables: weights and areas of square and round bars; weight per linear foot of flat bar steel; areas and weights of different shapes of steel bars; Brinell hardness numerals; hardness-conversion tables; temperature-conversion tables; revolutions per minute for assigned surface speeds; English-metric system equivalents.

Anyone who works with tool steel will find the 116 pages of the Tool Steel Treaters' Guide *packed with usable information. The guide will gladly be furnished free of charge to anyone who is engaged in war production. Write to Bethlehem Steel Company, Bethlehem, Pa., for a copy today.*

A Few of the Subjects Covered: NORMALIZING • ANNEALING • TEMPERING • QUENCHING MEDIA • MICROPHOTOGRAPHS OF HIGH-SPEED STEELS • HEAT AND TEMPER COLOR CHARTS • DEFINITIONS OF STEEL INDUSTRY TERMS • WEIGHTS OF STEEL BARS • FARENHEIT-CENTIGRADE • CONVERSION TABLES • DECIMAL EQUIVALENTS OF AN INCH FOR EACH 64TH.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY



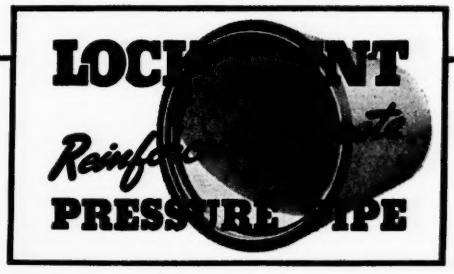
WE'RE in the Army too. With all-out effort, we're working hard on the battle of production so that water supply, sewerage and drainage can be provided for ordnance plants, arsenals, air bases, cantonments and other vital army projects.

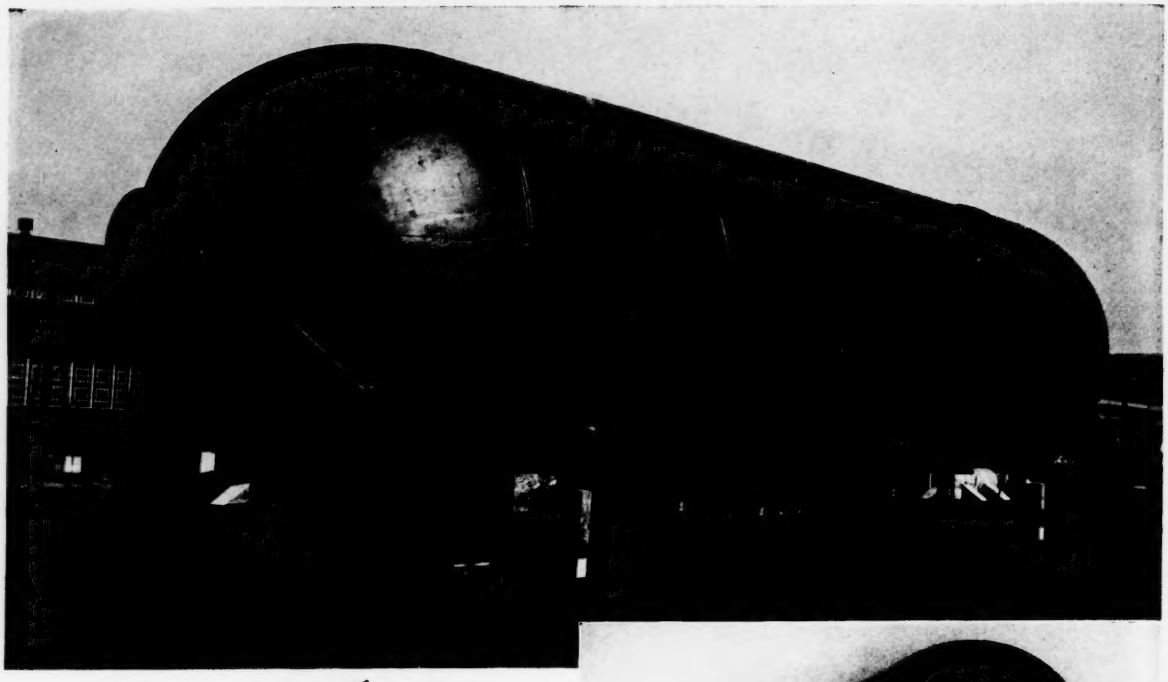
It is recognized that for large sized pipelines, Reinforced Concrete Pressure Pipe uses the least amount of critical materials and thereby makes more iron and steel available for the production of armaments. During 1941 and 1942, the use of Lock Joint Pipe caused a net conservation of 80,000 tons of iron and steel. AND all this was accomplished without any sacrifice of quality, performance or permanence.

LOCK JOINT PIPE COMPANY
Established 1905
AMPERE, NEW JERSEY

Denver, Colo. · Chicago, Ill. · Kenilworth, N. J. · Kansas City, Mo. · Rock Island, Ill.
White Plains, N. Y. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Mains as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*





Another PRESSURE VESSEL INSTALLATION FOR THE SOUTH

Here are two "bullets" which were fabricated at our Birmingham plant for an Ordnance Works in a Southern state. The vessels are each 10-ft. 5½-in. in diam. and 40-ft. 9-in. long, and will be used for the storage of anhydrous ammonia. Both vessels were stress-relieved.

THE experience and knowledge gained during peacetime production of welded steel pressure vessels has made possible the fabricating of units specifically designed to help various industries meet wartime production schedules. Not only are pressure vessels used for storing anhydrous ammonia but they may also be utilized to solve various storage and handling problems in the production of butyl rubber, aluminum and many other essential products.

If governing specifications call for x-raying or stress-relieving . . . our Birmingham plant has complete facilities for meeting these requirements. Vessels up to 13 ft. 2 in. in diameter and as long as can be shipped can be handled in the stress-relieving furnace.

In addition to pressure vessels, we are building a wide variety of storage tanks to serve industry, . . . and speed the war effort.

CHICAGO BRIDGE & IRON COMPANY

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Greenville, Pa.....York Street
New York.....3313-165 Broadway Building
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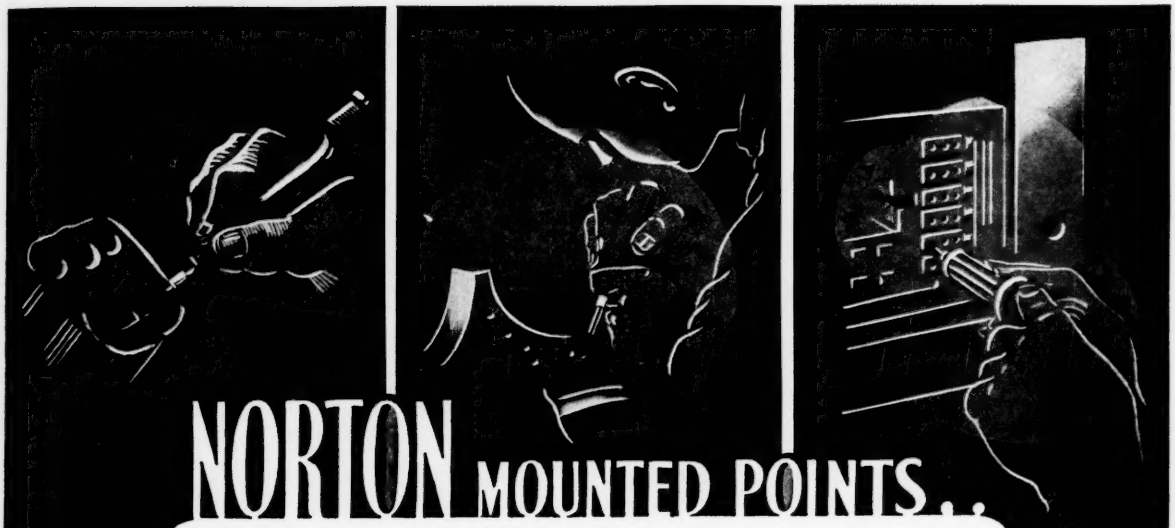
Chicago .....2106 McCormick Building
San Francisco .....1040 Rialto Building
Philadelphia...1619-1700 Walnut Street Building
Havana .....402 Edificio Abreu
Washington.....330 Bowen Building

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.



NORTON MOUNTED POINTS..

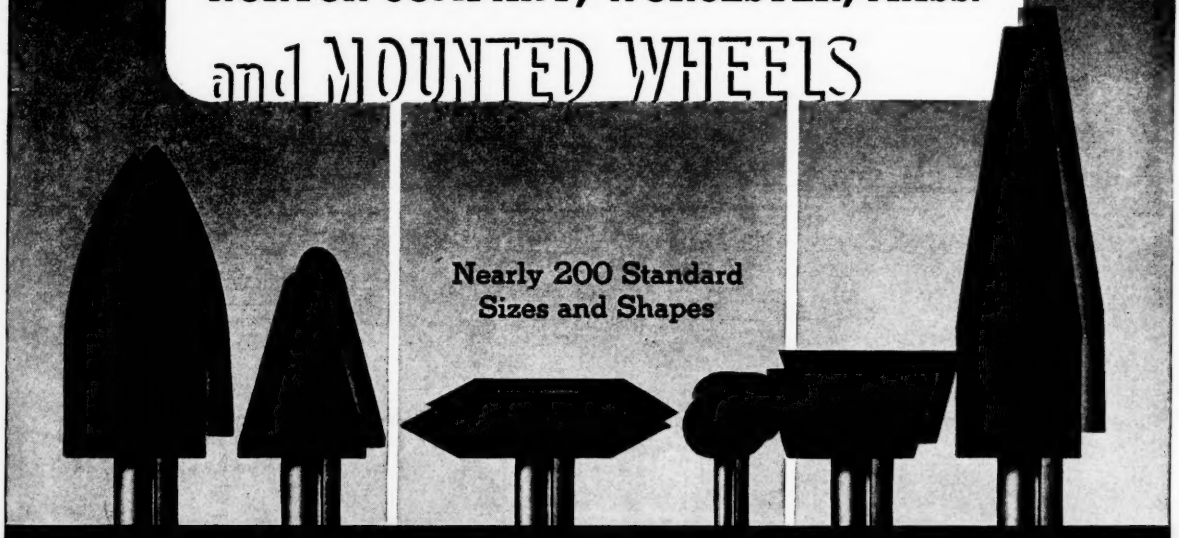
Little Things that can be a Big Help

THERE are literally hundreds upon hundreds of war jobs on which these Norton spindle mounted grinding wheels can be a big help. Not only in the tool room for making molds and dies but on countless production jobs they provide the quickest and easiest way to remove metal. In air or electrically operated grinders they can be used by hand or mounted in lathes, millers, and other types of machines.

There's a Norton catalog that shows the complete line of sizes and shapes. Write today — asking for Form 43-M.R.

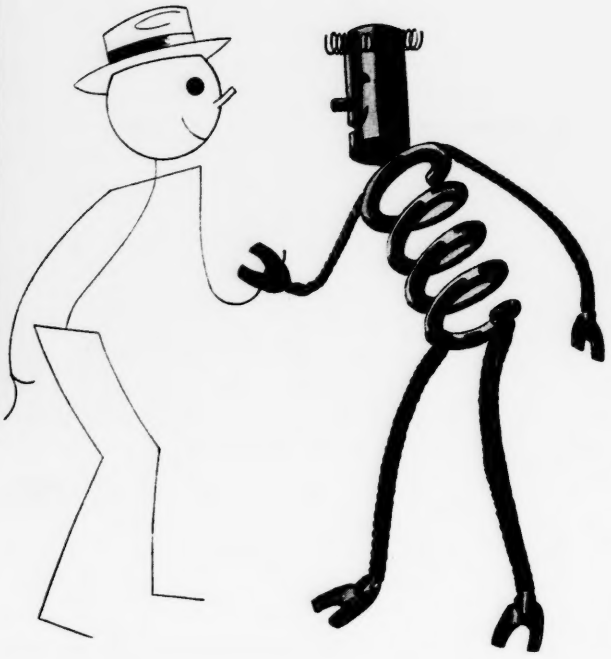
NORTON COMPANY, WORCESTER, MASS.

and MOUNTED WHEELS



NORTON ABRASIVES

WE HAVE
THIS TO SAY
ABOUT



The copper industry has been doing an outstanding job in this war. Don't forget it when you are passing out the *kudos*. Where would the war be without copper, lots of it?

Copper is really something. It is the best stuff in the world for many, many things. The endowments nature gave it can never be gainsaid. Everybody knows copper.

But do they? Are the thousands of Imagineers throughout industry giving this familiar metal the attention it deserves? There *must* be new ways to use copper.

It must be obvious that we, whose minds are full of ideas about future uses of Alcoa Aluminum, make this suggestion about copper for the best American reason there is. Every new use to which copper can be put after the war makes for employment. For all we know, some new application you may devise for copper will call also for some aluminum, working side by side.

What we are trying to get at is this: If you will tackle industry's basic responsibility of providing postwar jobs by doing some serious Imagineering, we are willing to let the *specs* fall where they may.

When you do start to engineer your Imagineering down to earth we can honestly promise you some rather amazing potentialities in Alcoa Aluminum.

We have poured everything we know into the speedy sevenfold expansion of the aluminum industry for war. We have given freely of that knowledge to others. Tremendous volume is only the beginning of the aluminum story. At Alcoa, production efficiency has been lifted to new levels all along the line.

The war is getting the whole benefit now. When that has been won, it will be the Imagineers' turn.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.

IMAGINEERING AT WORK

Alcoa Aluminum

ALCOA

KEEPING WAR TONNAGE *on the move!*

A FEW years ago the loads being moved today by America's transportation system would have seemed impossible. But war has a way of demanding the "impossible." The challenge is being met by making the fullest utilization of every channel of transport. Inland waterways and other carriers are working as a team, sparing no effort to keep war tonnage on the move.

Countless river and harbor craft are joined in this gigantic task of supply and interchange. They are carrying an important share of the fuel and raw materials destined for war industries; scrap for blast furnaces; sand, gravel and cement for emergency construction; and the finished products of mills and factories to strategic shipping ports.

To the several thousand American Bridge-built craft already in service, we are steadily adding increased deadweight tonnage, produced by our recently completed Marine Works. These modern facilities, we believe, are unmatched. Planned and built with foresight that now stands the nation in good stead, this plant already has set significant records in barge construction.

Today—our entire marine resources are engaged in construction for war.

Tomorrow — these same resources of men and equipment will stand ready to serve with equal efficiency the transportation needs of our nation at peace.

AMERICAN BRIDGE COMPANY

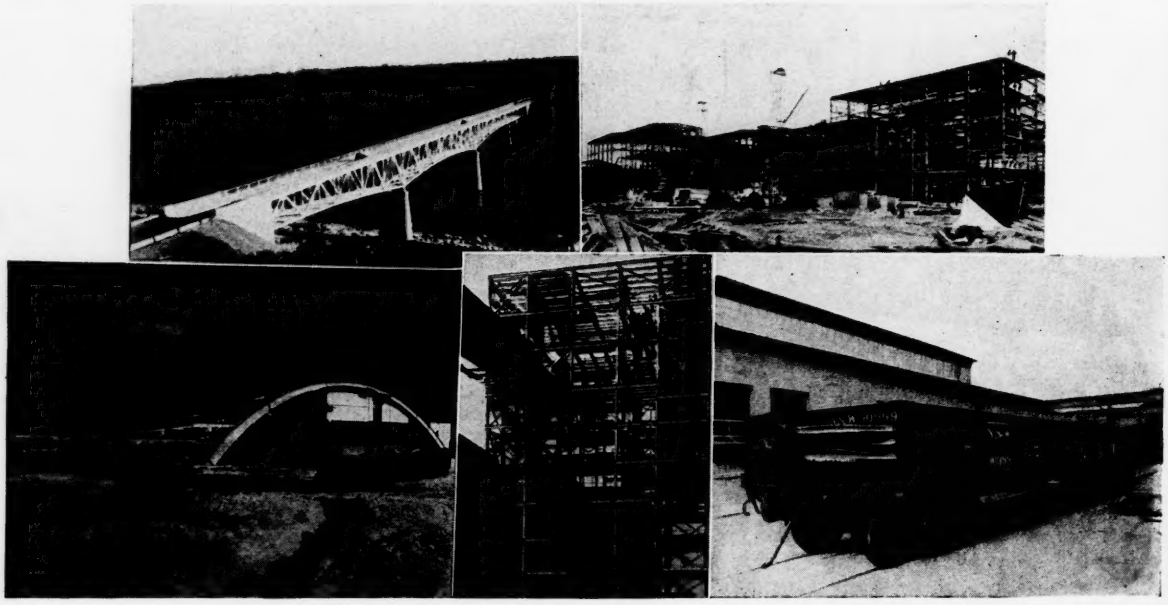
General Offices, **Frick Building, Pittsburgh, Pa.**

Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit · Duluth
Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

UNITED STATES STEEL

The Sooner the Better



The sooner we can get back to building structures like these for peace-time progress the better all of us will like it.

But many of those we must build today are different because they are designed to fit into a Master Program of construction and production which has but one aim—supplying the materials and equipment of war in overwhelming volume in the shortest possible time. Under pressure of a powerful necessity the job has assumed fantastic proportions, but thanks to American ingenuity and constructive imagination it is going forward with a speed and on a scale that represents a miracle of industrial performance.

With a well known reputation for our ability to handle many types of construction involving complicated engineering and fabricating features, Virginia Bridge was destined to take an important part in a program requiring structural steel in such large quantities and varied forms. It was no accident that our Roanoke plant was among those first to receive the Army-Navy "E" Award.

Today our resources must be devoted to building the things that will hasten the tomorrow when we can again return to peace-time construction. We are prepared to give the structural steel job that will contribute to that end our maximum service and cooperation.

Virginia Bridge

STEEL STRUCTURES
ALL TYPES

Plants:
Roanoke, Va.
Birmingham, Ala.
Memphis, Tenn.

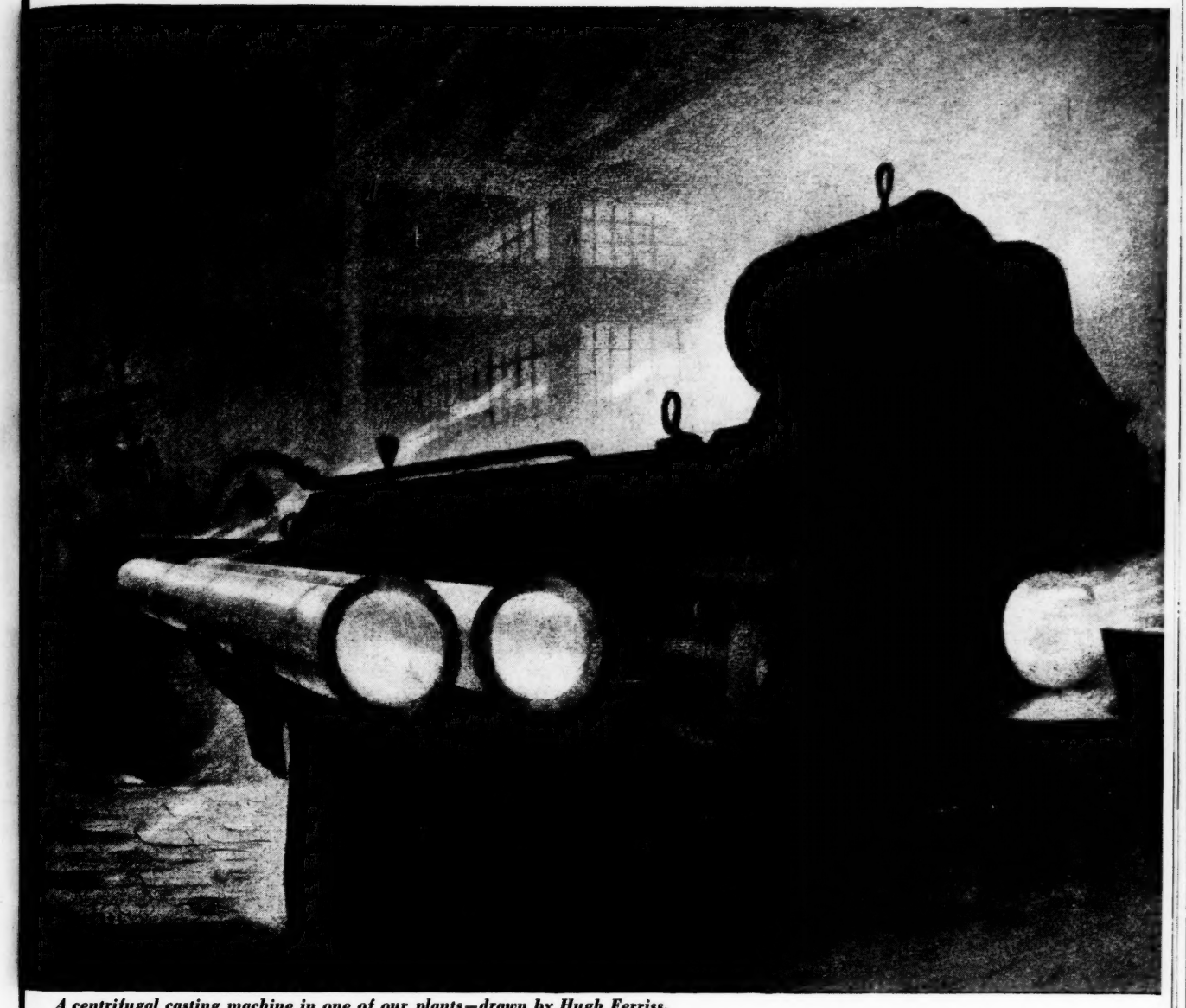
VIRGINIA BRIDGE COMPANY

(South's Largest Structural Steel Fabricator)

Roanoke Birmingham Memphis New York Atlanta Dallas

UNITED STATES STEEL

Ready to go...



A centrifugal casting machine in one of our plants—drawn by Hugh Ferriss.

When you get the "green light" on your deferred plans for improvements and extensions you will find us ready to give you quick action on your orders for cast iron pipe and fittings. Batteries of Super-de Lavaud centrifugal casting machines in three plants—machines which have been largely devoted to the war effort for the past two years—are ready to go all-out to meet the accumulated needs of water supply, gas and sewerage systems throughout America. Our specialized fittings plant, and special castings foundries in other plants, are also ready and equipped as never before.

UNITED STATES PIPE & FOUNDRY CO.

General Offices: Burlington, New Jersey. ***Plants and Sales Offices throughout the U. S. A.***

A Dream . . . A Prayer . . . and A Pledge

• Over highway and byway in the Gulf South, troop convoys—seemingly endless—roll constantly. Soldiers wave a friendly greeting to a boy and his dog.

These are moments of thrill, and of pride, for this 12-year-old. Like his daddy, they too will soon be in distant lands, fighting on far-away battle fronts. He dreams and prays for the day when these convoys will be going the other way . . . when Victory's won and his daddy—and daddies throughout the world—will come home again.

The Gulf South joins with all America in this boy's prayer . . . has dedicated all of its rich natural resources and all its industrial might to Victory. We pledge to continue doing everything to back up these heroic defenders of freedom and make this boy's dreams come true.

BUY WAR BONDS . . . FOR VICTORY NOW . . . FOR PEACE IN THE FUTURE

The Gulf South

Working with All America for VICTORY

This Advertisement Published by

UNITED GAS PIPE LINE COMPANY

A Natural Gas transmission Company built in peacetime . . . now dedicated to serve wartime fuel requirements throughout the Gulf South.

FOR TEXAS, *Mail received at:* Beaumont, Dallas, Fort Worth, Houston, Longview, San Antonio and Wichita Falls. FOR LOUISIANA, *Mail received at:* Baton Rouge, Lake Charles, Monroe, New Orleans and Shreveport. FOR MISSISSIPPI, ALABAMA and FLORIDA, *Mail received at:* Jackson, Miss.

COPR., 1943, UNITED GAS PIPE LINE CO.

Ideal location
for new and branch plants,
war-time—peace-time.

Unusual combination of advantages — that may be ideal for YOU, as nationally known industrialists have found them.

Location	At the third largest port on the Atlantic coast.
Transportation	A swift system developed by important exchange between railroads and steamship lines. Trunk line railways with close access to all parts of the United States. Air port accommodations.
Resources	Raw materials, economically available.
Labor	Here, sentiment is against strikes.
Living Costs	Lack of extreme weather conditions makes living costs lower and allows continuity of production.
Taxes	New industries are exempt from county taxes for a limited time.
Water	Good supply of water for industries needing ample supply.

These suggestions are briefly stated as indications of subjects in your correspondence with us. All correspondence held strictly confidential.

THESE INDUSTRIES DECIDED FAVORABLY

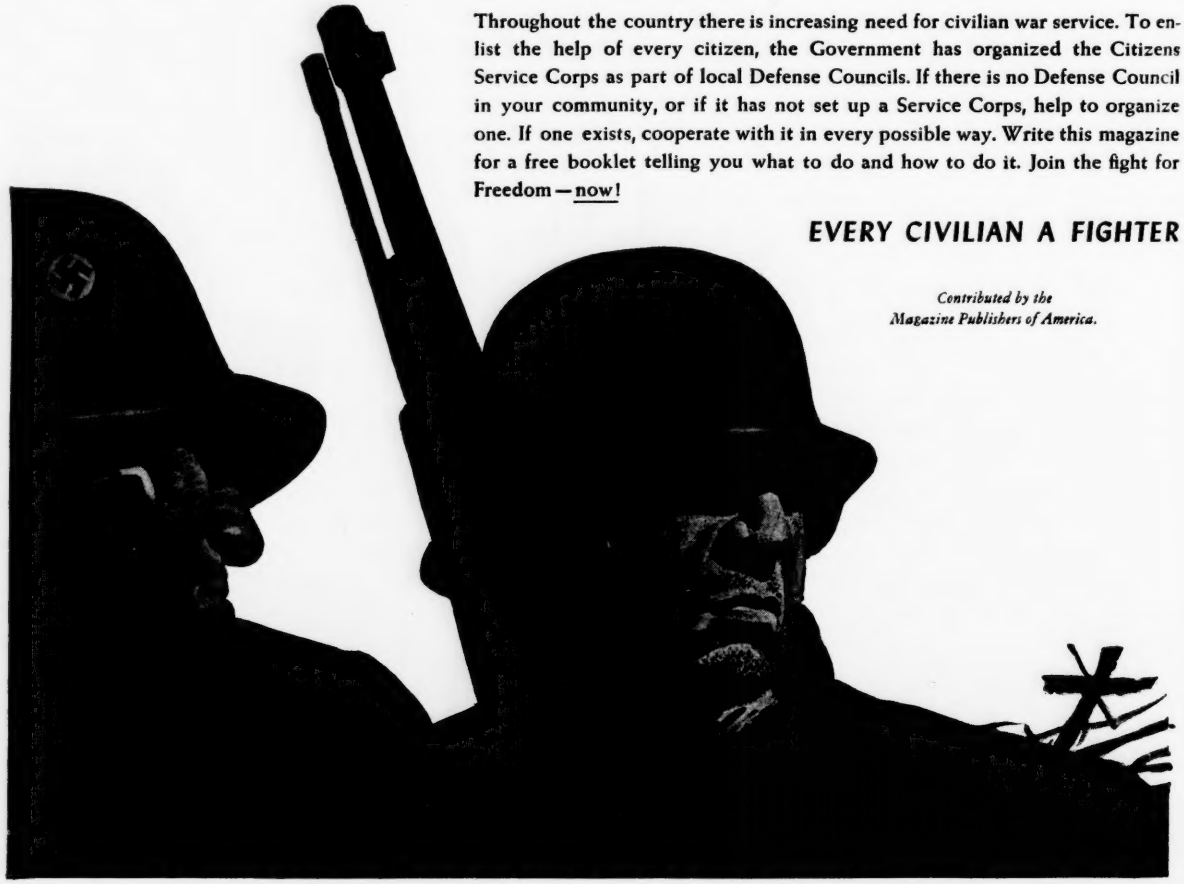
NATIONAL GYPSUM CO. — AMERICAN STEEL & WIRE CO. — CERTAINTEED PRODUCTS CORP. — UNION BAG & PAPER CORP. — SAVANNAH SUGAR REFINING CORP. — ATLANTIC CREOSOTING CO. — HERCULES POWDER CO. PAN AMERICAN PETROLEUM TRANSPORT CO. — DIXIE ASPHALT PRODUCTS CO. — MACEVOY SHIPBUILDING CORPORATION.

PORT WENTWORTH CORPORATION

New York—17 E. 42nd St. **Savannah—Box 1094**

If they win ...only our dead are free

These are our enemies.
They have only one idea—to kill, and kill, and kill, until they conquer the world.
Then, by the whip, the sword and the gallows, they will rule.
No longer will you be free to speak or write your thoughts, to worship God in your own way.
Only our dead will be free. Only the host who will fall before the enemy will know peace.
Civilization will be set back a thousand years.
Make no mistake about it—you cannot think of this as other wars.
You cannot regard your foe this time simply as people with a wrong idea.
This time you win—or die. This time you get no second chance.
This time you free the world, or else you lose it.
Surely that is worth the best fight of your life
—worth anything that you can give or do.



Throughout the country there is increasing need for civilian war service. To enlist the help of every citizen, the Government has organized the Citizens Service Corps as part of local Defense Councils. If there is no Defense Council in your community, or if it has not set up a Service Corps, help to organize one. If one exists, cooperate with it in every possible way. Write this magazine for a free booklet telling you what to do and how to do it. Join the fight for Freedom—now!

EVERY CIVILIAN A FIGHTER

Contributed by the Magazine Publishers of America.

Industrial Gardenspot for a New Tomorrow

"TODAY, WE PRODUCE TO DESTROY. But tomorrow we will produce to build."

UNDER THE PRESSURE OF WAR, science and industry will compress into a scant few years the advancement of knowledge and the discovery of processes which normally would develop only in generations.

WITH THE COMING OF PEACE, these processes will constitute the basic elements for building a new world, and will be given practical application in a new order of industry. Nowhere could this new industrial order find a more suitable home than in the rapidly growing Southeast, where raw materials are abundant; power ample; transportation facilities adequate; desirable plant sites available; and labor and climatic conditions favorable.

THE DEVELOPMENT SERVICE of the Atlantic Coast Line Railroad, which for years has comprised a well informed industrial, geological and agricultural personnel, is prepared to assist in the solution of the problems of the new order.

INQUIRIES are invited and will be treated confidentially.

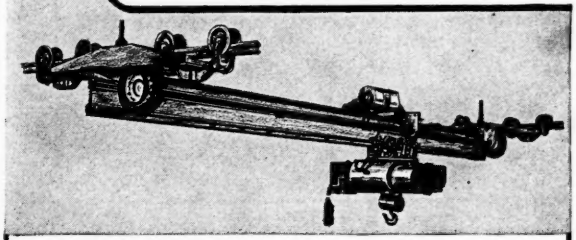
R. P. JOBB

Manager Development Service

Wilmington, N. C.

ATLANTIC COAST LINE RAILROAD

FREE MOVING CRANES *Aid* WAR WORK



Flexible Design Permits later adaptability to regular production

★Every American MonoRail System must be "made to order" and yet, these "tailor-made" systems are made from standard parts. Because of its extreme flexibility, American MonoRail offers a wide range of application without costly adjustment or lengthy engineering.

American MonoRail Cranes have proved to be invaluable in hundreds of installations. With the structural design greatly simplified, dead weight of the crane bridge is kept at the lowest point consistent with strength. This provides maximum live load capacity and requires less effort to move. Elimination of friction at all points by the scientific use of proper bearings make American MonoRail cranes the easiest of all to handle.

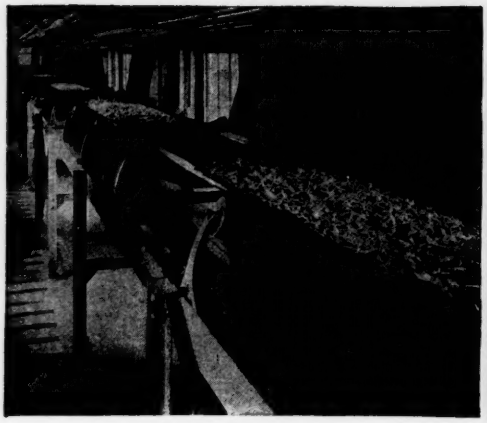
WRITE FOR Blue Book illustrating hundreds of MonoRail installations

Let an American MonoRail Engineer consult with you.

THE AMERICAN MONORAIL CO.

13118 ATHENS AVE. CLEVELAND, OHIO

★



Jeffrey troughed type belt conveyors for handling a continuous flow of bulk materials such as sand, coal, chips, cullet and cement. Jeffrey flat belt conveyors for handling material such as glass, sheets, packaged goods, boxes or cartons. Conveyors keep it moving along.

TWO WAYS TO KEEP IT MOVING

"Take it away as fast as it comes" was never so important as now when industry is endeavoring to meet war-production schedules. Jeffrey has been designing and building material handling equipment for over 65 years . . . you are assured of products with character built-in, to give the most in service . . . in speed.

Chains
Bucket elevators
Coolers
Crushers
Dryers
Feeders
Portable loaders
Portable conveyors
Bag stackers
Pulverizers
Screens
Car Pullers

The Jeffrey Manufacturing Company

926-99 North Fourth Street, Columbus, Ohio

Baltimore	Cincinnati	Houston	Pittsburgh
Birmingham	Cleveland	Huntington, W. Va.	St. Louis
Boston	Denver	Milwaukee	Salt Lake City
Buffalo	Detroit	New York	Scranton
Chicago	Harlan	Philadelphia	

Jeffrey Manufacturing Co., Ltd. of Canada, Head Office & Works: Montreal.
Branch Offices: Toronto, Calgary, Vancouver.

INDUSTRIAL SURVEYS

in the Seaboard Southeast

FOR MANY YEARS we have helped industry by furnishing reliable surveys on industrial locations in the Seaboard Southeast.

MORE RECENTLY we have likewise assisted numerous Government agencies by supplying authentic reports on various parts of our territory.

OUR PRIME OBJECTIVE:—To contribute to our Country's war effort in every possible way until victory is won.

INDUSTRIAL DEPARTMENT

SEABOARD
AIR LINE RAILWAY

WARREN T. WHITE
General Industrial Agent
Norfolk, Va.

THROUGHOUT the ages Nature laid down in the earth of this land a vast storehouse of the world's finest bituminous coal — a power of progress in times of peace; a vital weapon in war.

Today, bituminous coal is the fuel that feeds our furnaces of war. It is the source of a thousand and one by-products that make the materials of war. Without it, America could not utilize and develop her great natural resources and industrial capacity — for war.

This nation's all-out production for total war demands an abundant and continuing supply of bituminous coal — and uninterrupted, mass transportation to move the coal swiftly and safely, whenever and wherever it is needed.

The Norfolk and Western Railway is proud of the privilege of serving one of America's great coal fields — fields that produce approximately one tenth of the country's annual bituminous output. This railroad is proud that it had the equipment, the experience and ability to move from mines along its lines during the past year, 53,000,000 tons of coal.

Bituminous coal is feeding our furnaces of war. It is feeding the fires of freedom! Nothing must be allowed to interfere with its production — and its transportation.

Norfolk and Western Railway

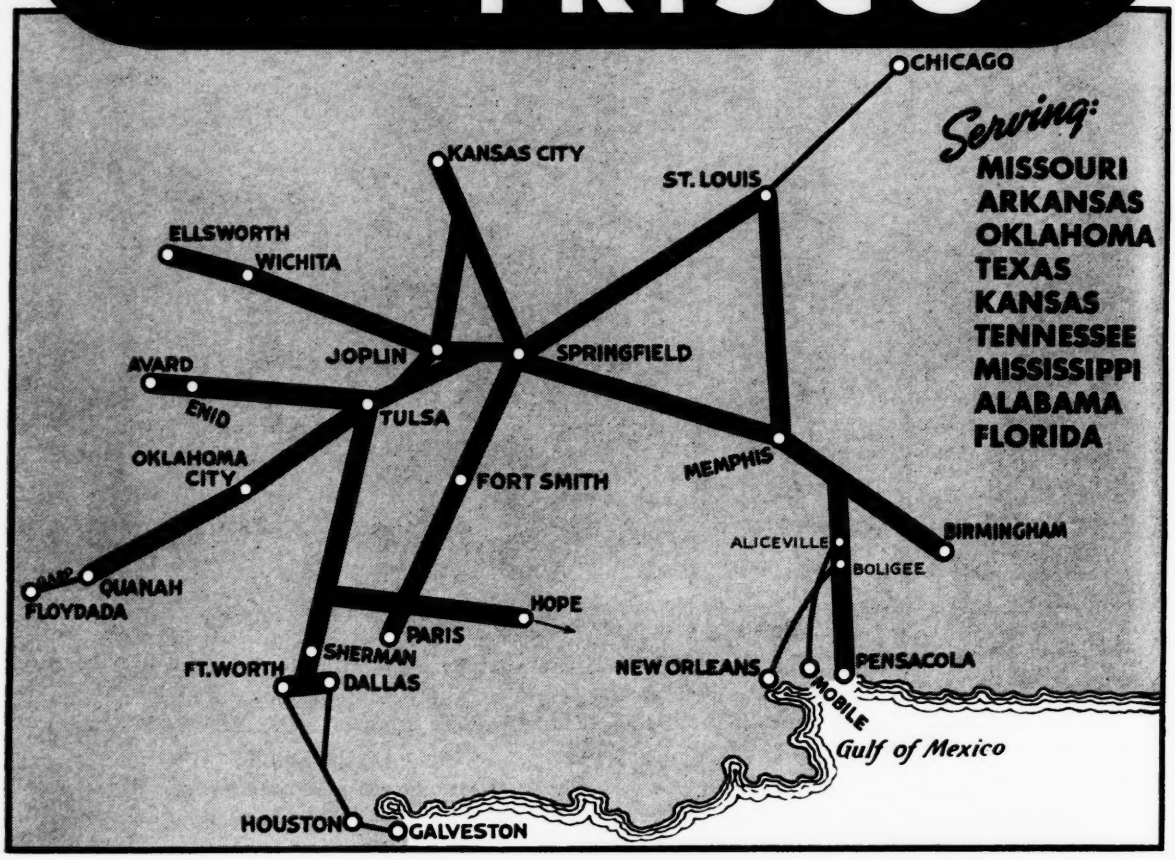
CARRIER OF FUEL SATISFACTION

BUY U. S. WAR BONDS

MARCHING AHEAD

throughout the South

Served by **FRISCO**



INDUSTRY—MANUFACTURING—AGRICULTURE

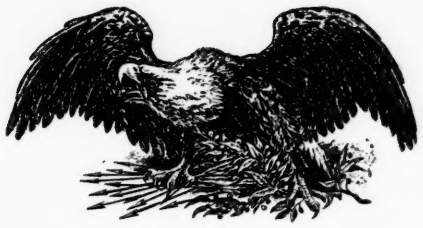
Breaking Production Records!

The vast, rich territory, served by Frisco, is on the march. Its oil refineries, lumber mills, steel mills and mines . . . factories of all sizes and types . . . cottonseed oil mills, packing houses, canneries . . . textile mills . . . egg and poultry producers . . . and a host of other industries, are humming to meet the nation's needs. Ready at hand are almost inexhaustible raw materials and natural resources . . . low cost power along with ideal climatic conditions in this great opportunity area. The ability of the Frisco territory to answer the call to production in wartime is additional proof of the opportunities that the Southeast, South and Southwest hold for business in the peacetime operations ahead.

FRISCO FASTER FREIGHT

FRISCO LINES

ST. LOUIS-SAN FRANCISCO RY.



THE GOOSE THAT LAYS THE GOLDEN EGGS

It is time for all of us to return to common sense and to realize that there is no easy way from the cradle to the grave.

Mouthing words like "freedom from fear" when millions of our young men are facing fear and gaining courage and becoming real men by so doing shows a complete lack of understanding of the essential American spirit.

Talking about "freedom from want" which does not couple that thought with freedom to work is an admission that the American way of life is a failure.

It is time that the people of this great Nation recognize the difference between performance, the kind of performance that our armed forces are showing to the world, and the window dressing that is being displayed to a bewildered people at home by the socialistic artists who dress their puppets exhibited for our visual and mental consumption.

It is time to turn a deaf ear to the charletans who promise to pull a chicken out of the hat for everybody. Somebody has to raise the chickens, and somebody has to supply the hat. All that the charletans do is supply the talk. And talk is cheap.

Talk is cheap when it is indulged in by the spellbinders but it is expensive when paid for by the rest of us who are expected to swallow it. Business, through its advertising, is paying for "My Day." It is paying for all of the palpitating pap that is being given to newspapers and magazines to print and to radios to broadcast.

Business condones and tolerates its own exploitation at the hands of inconsistent theorists. The men and women who depend on business for their daily living are being duped by the hope that somehow the government will support them.

Do you remember the fable of the goose that laid the golden eggs?

Sinews of the South

Long before the war, the South had been showing its imposing strength. But that was only the beginning . . .

After the war, the South will take a leading part in the new world that will open up . . . a more abundant world made possible by today's remarkable scientific advances . . . a world of plastics, synthetics, new fabrics and new products.

The southern states are notably rich in the natural resources needed by tomorrow's technology. Southern timber, agricultural products, chemicals and minerals are exactly those required for the new processes.

Reaching into every part of the South, the great network of the Southern Railway System ties farm and forest and factory together into a compact industrial unit. Resources, labor, industry . . . and ready transportation . . . these are the strength of the South.

Today, the busy trains of the Southern haul troops and war materials. Tomorrow, these trains will keep busy serving the new world.

Look ahead . . . look South.

Ernest E. Norris
President

SOUTHERN RAILWAY SYSTEM

The Southern Serves the South

THOMAS JEFFERSON

American

On April 13th two hundred years ago a great American was born. He was a wealthy man, a scholar, a statesman but above all he was a man who understood the problems of his fellow men.

Thomas Jefferson, in spite of the fact that he owned a lordly estate on the hilltop overlooking what is now Charlottesville with a view spreading scores of miles to the east, did not think that wealth was wrong in itself but that the opportunity to acquire wealth should be the privilege of every American. Any who may doubt this statement should read the Declaration of Independence that he wrote. Any one who then still has doubts should read the record of his performance when he was President and after his retirement.

This is not meant to be a record of the achievements of a great man, America's first Democrat. It is written with the hope that it will inspire others to read and learn about the man who was the inspiration of his generation and the guiding genius of a great party until 1933.

Thomas Jefferson, beyond the shadow of a doubt, could have had a third term as President. There was a state of emergency. We were on the verge of war with Great Britain. We were a weak and puny nation facing terrific odds. But what did Jefferson say: "If the principle of rotation be a sound one, as I conscientiously believe it to be, with respect to this office, no pretext should ever be permitted to dispense with it; because there never will be a time when real difficulties will not exist and furnish a plausible pretext for dispensation." (To Henry Guest, January, 1809.)

"If some termination to the service of the Chief Magistrate be not fixed by the Constitution or supplied by practice, this office, nominally for years, will, in fact, become for life, and history shows how easily that degenerates into an inheritance." (To Vermont Legislature.)

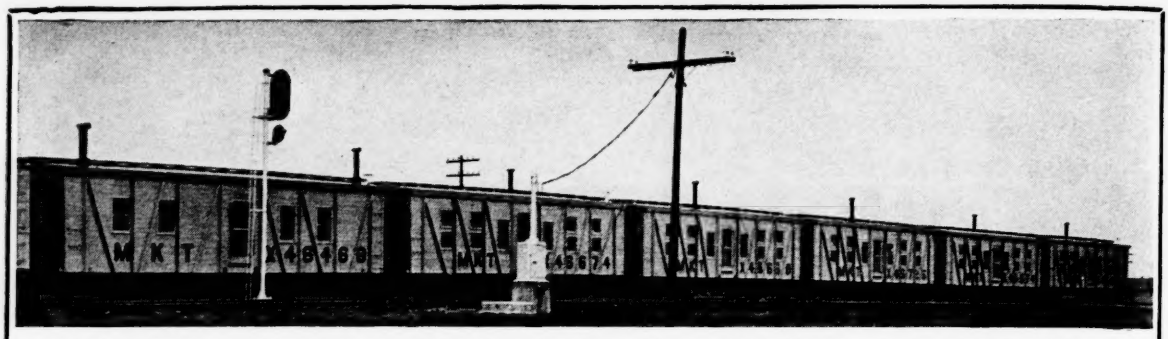
"Believing that a definite period of retiring from this station will tend materially to secure our elective form of government, I have felt it a duty to withdraw at the close of my present term, and to strengthen by practice a principle which I deem salutary." (To Abner Watkins, December, 1807.)

"To lay down my charge at a proper season is as much a duty as to have borne it faithfully." (To Mr. Weaver, June 1807.)

"Having myself highly approved the example of an illustrious predecessor, in voluntarily retiring from a trust which, if too long continued, in the same hands, might become a subject of uneasiness and apprehension, I could not mistake my own duty when placed in a similar situation." (Reply to "Connecticut Republicans," 1808.)

To be sure Thomas Jefferson had directly before him the experience of the French revolution and the logical result from it of the Napoleonic seizure of power. To be sure he learned much of his political philosophy from Rousseau but he tempered this philosophy with the good hard common sense of a man who earned his living from the land—and expected his neighbors to do the same.

Where Jefferson saw Napoleon we now see Hitler and Mussolini. Where he saw a national crisis and an example of despotism we now see the same things. But Jefferson realized that the nation, small and struggling though it was at that time was still the self perpetuating image of the ideals toward which mankind was striving and for which he was happy to subordinate any personal vanity or ambition.



New Katy "outfit" cars are providing Katy employes with the "tools to do the job."

To the PEAK of PERFECTION—

Granted that a workman cannot do his best work without good tools, the Katy's chief claim to real achievement in its year 'round drive to improve shipping records lies in a rehabilitation program that is giving Katy workmen what might well be described as "a better railroad to work with!"

A comprehensive plan for the general maintenance and improvement of the railroad has been rapidly advanced to pace the accelerated traffic of a wartime economy.

Many miles of railroad have been relaid; hundreds of miles of Katy track have been reballasted, millions of cross ties renewed, many thousands of dollars spent in other track work. Bridges and buildings have been put in A-1 condition, Katy locomotives and rolling stock extensively overhauled, and many uniquely designed units of freight equipment put into service to do special-purpose work with the maximum of efficiency.

The availability of high class equipment—, and a railroad in prime condition!—contributes in no small part to the Katy's ability to play an important role in the war effort . . . and is hereby submitted as our chief contribution to

PERFECT SHIPPING

M·K·T
Missouri-Kansas-Texas Lines

MISSOURI-KANSAS-TEXAS LINES

The KATY Serves the Southwest Well

PERFECT SHIPPING

In peace time, Perfect Shipping is a matter of common sense and good business practice. But in times such as these it is much more, it is a vital necessity.

With carriers—railroads, ships, trucks and airplanes, short of equipment and burdened with a volume of traffic such as they have never shouldered before, their task of moving freight promptly and efficiently cannot be overemphasized as to importance. Failure to deliver on time throws schedules out of line and may prevent essential materials from arriving for our fighting men at the exact moment it is needed. In addition, much of the material now being shipped consists of a volatile, explosive or perishable nature and the fact that it is going to all corners of the world, sometimes tropical, sometimes arctic, and is subject to treatment such as cannot be imagined, least of all foreseen, makes it absolutely essential that every article be adequately packed but devoid of excessive packing which takes up valuable cargo space.

The same is true of civilian goods. Materials are too scarce to permit any chance being taken of products arriving in a damaged condition at their destination.

Every loss or damage is a cumulative waste of material, manpower and transportation. Also, it is a blow struck in favor of our enemies.

The articles which follow discuss some of the problems involved in Perfect Shipping and what has and is being done to correct them.—*Editor.*

WAR PRODUCTION BOARD
WASHINGTON, D. C.

OFFICE OF
DONALD M. NELSON
CHAIRMAN

February 25, 1943

I am glad to give my endorsement to the Perfect Shipping campaign.

It is of course absolutely essential for this nation to make the most effective use of all of its resources in the war effort. Waste, loss or delay anywhere along the line have a direct and harmful effect on our effort to win the war as quickly as possible. For that reason, anything that can be done to reduce damage to goods in transit should be done. By promoting good packing, secure loading and careful handling of shipments, the Perfect Shipping campaign should be of genuine value, and I hope it receives widespread support.

Sincerely yours,

Donald M. Nelson

Manufacturers Record
Baltimore, Maryland

PERFECT SHIPPING

By

JOSEPH B. EASTMAN,

Director, Office of Defense Transportation

TO shippers and railroad men, April is Perfect Shipping Month. During this month, in every year since 1937, there has been conducted an organized campaign for proper packing and careful handling of freight and express shipments. Perfect Shipping is an ideal not easily attainable but at the same time not so remote a gaol as to be unreal. It is generally agreed that the Perfect Shipping campaigns have been to a considerable extent responsible for reducing loss and damage to shipments on the railroads.

When the Shippers Advisory Boards, the Association of American Railroads, and the Railway Express Agency began to preach the gospel of Perfect Shipping, their purpose was to work for elimination of an economic waste that was costly alike to the carriers and their customers. As it has turned out, the Perfect Shipping campaign was also in essence a war preparedness measure. By stimulating adoption of improved methods of packing and loading, by inducing greater attention to careful handling, the campaigns prepared shippers, handlers, and receivers of freight and express to cope better with the conditions that obtain today.

Loss or damage of commodities through carelessness now means more than economic waste. It involves duplications of production and transportation, a drain on materials and manpower, that the Nation cannot afford when all its resources are required for prosecution of the war and maintenance of the civilian economy. That is why, at this time, it is more important than ever to drive home the precepts of Perfect Shipping.

The war has enormously increased the demand for transportation service of all kinds. In order to assure maximum utilization of the available facilities, it has been necessary in numerous instances to alter customary practices in the interest of greater efficiency. Freight cars, for example, must now be loaded more heavily. Orders issued by the Office of Defense Transportation require the rail carriers to load less-than-carload freight to a certain minimum weight per car, while consignors shipping in carload lots must load the cars to their full capacity, except in the case of certain commodities for which special loading directions have been prescribed by ODT.

Despite original misgivings on the part of some shippers, experience has proved that the heavier shipments of carload freight called for by our General Order 18 can be carried without damage to the lading. In fact, in some instances, because of the closer attention being paid to packing and loading, the heavier shipments have been arriving in better condition. And some shippers have found it possible to load in excess of the requirements prescribed under the order. This is a case where improved packing and loading practices are definitely contributing to wartime transportation efficiency.

While the Perfect Shipping campaigns have been devoted primarily to promotion of proper packing and careful handling, I feel that the concept of Perfect Shipping may well be broadened in wartime to include other objectives whose attainment is essential to maximum utilization of our transportation facilities. I am thinking of certain steps in the loading and movement of carload freight, where in some cases there are opportunities for improved performance on the part of both shippers and carriers.

Shippers can help, for example, by placing their

(*Continued on page* 74)

PERFECT SHIPPING—— Its BENEFITS

By

C. H. DIETRICH

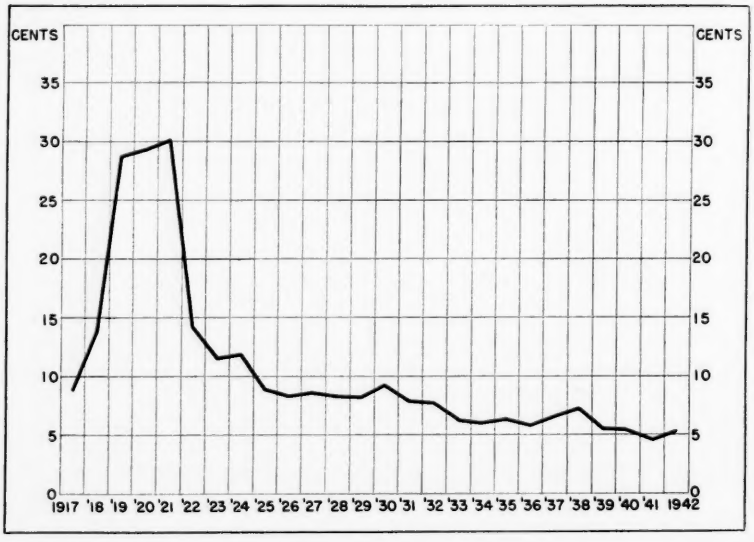
Executive Vice Chairman
Freight Claim Division
Association of American Railroads
Chicago, Ill.

THE seventh annual observance of "Perfect Shipping Month" is just ahead and a brief resume of the six preceding campaigns, with special reference to the benefits obtained therefrom, seems appropriate.

From my active participation in these six annual events, sponsored by the thirteen Regional Shippers Advisory Boards and promoted with the active cooperation of the rail transportation companies, through the Association of American Railroads, my observations on the benefits that have been derived by shippers and receivers on one hand and transportation companies on the other, in this joint effort to safeguard the nation's freight against loss and damage, indicate that there is one outstanding service which has reacted to the clear advantage of all interests connected with this unique activity.

I do not refer to countless minor benefits which transportation companies have enjoyed as a result of remedial measures adopted by shippers, such as redesigning and strengthening of packages; improvement in marking freight with full name and address of consignee with destination point and state shown in full, together with shipper's name and address; earlier delivery of less carload freight to freight stations; checking of shippers with their customers to ascertain whether their shipments are arriving in good order, etc., and the many other programs which individual shippers have originated to assist in safeguarding and expediting the movement of their freight, much of which has been inspired by their participation in these "Perfect Shipping Month" campaigns.

Neither do I have in mind the substantial benefits which shippers and receivers have profited by indirectly through an educational program on the part of the railroads by which every officer and employee, having to do with the handling of freight, from receiving clerks who take it at the freight house door to loading forces who stow it in cars, to yard and train crews who handle the cars down to the final delivery at destination, have been drilled on the necessity of careful and expeditious handling of freight entrusted to their care.



Loss and damage cost per thousand revenue ton-miles.

Nor do I refer to the maintenance by the carriers of the Freight Container Bureau, which has furnished the free services of competent container engineers to any shipper or receiver desiring such advice; nor to the special organizations on all railroads, with their traveling freight service inspectors, for the study of causes of loss and damage and the application of remedial measures.

These and many other similar activities have been carried on to stimulate the interest of all carrier employees in the safe and prompt handling of freight.

The outstanding benefit which I refer to, and which stands out over and above all else, is the opportunity which these "Perfect Shipping Month" campaigns have furnished officers and employees of transportation companies and shippers and receivers throughout the country better to understand each other's problems and, through this better understanding, work out amicably and efficiently the difficult situations which, in the beginning, appeared to be insurmountable.

Even if no other benefit than this had been obtained, I submit that the time, energy and money spent on the six previous "Perfect Shipping Month" programs would have been well worth while and paid a handsome return to all interests.

(Continued on page 73)

PERFECT SHIPPING——

By AIR

By

P. H. CUMMINGS

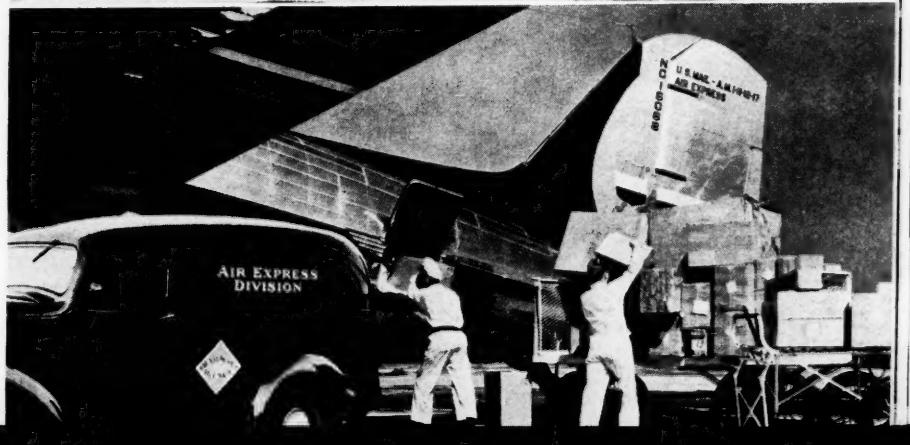
Air Express Executive,
Railway Express Agency, New York

THE need for speed and more speed in furthering the country's war production has been graphically reflected in the extraordinary increase in volume of air express during the past year. Shipments in 1942 exceeded 1,400,000, the highest figure in the 16-year history of the service, while the weight of shipments was more than 21,500,000 pounds, or almost double the 1941 total. At the same time, the gross revenue of this traffic increased 112 per cent compared with 1941.

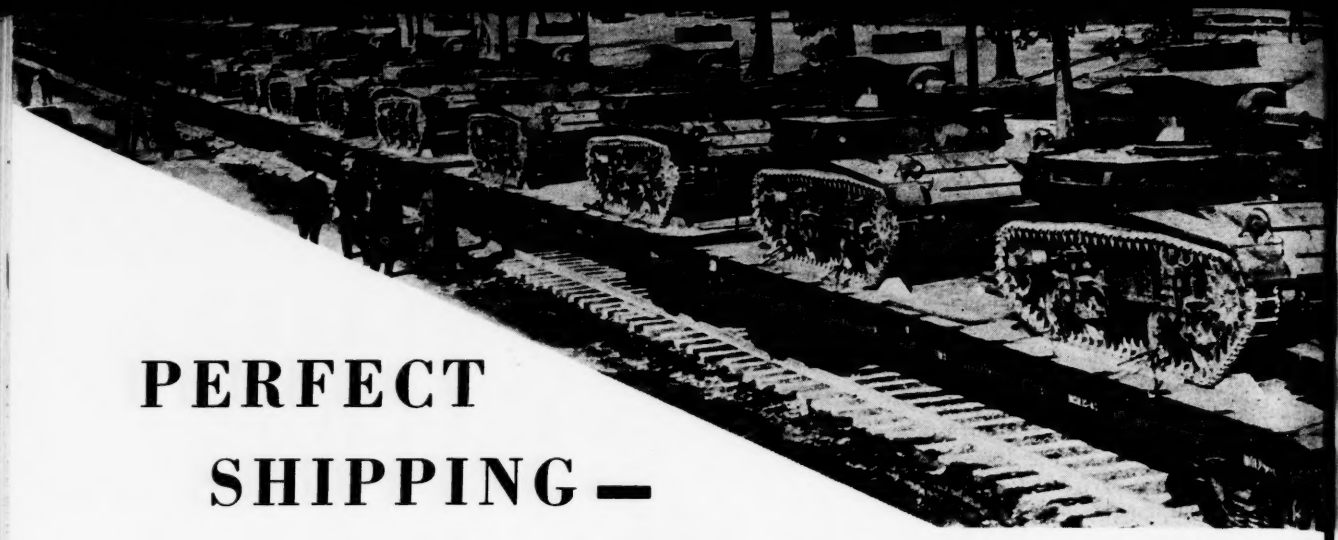
The full significance of this increase in air express only becomes apparent, however, when viewed in the light of all the circumstances. In the first place, both passenger traffic and air mail also rose substantially. Yet the commercial air lines were operating with their pre-war number of planes for only six months of 1942. During this period the demand on all phases of air transport increased phenomenally. But in July the imposition of government rulings established priorities for passengers and reduced the various companies' operating equipment from 25 to as much as 75 per cent. Many, if not all, of the commandeered planes, were then painted to resemble those of the army and were continued in operation for the government by the commercial lines. The traffic moved by these planes is *not* included in the figures cited for 1942. But that is only part of the story. Of the planes remaining in civil operation, the armed forces could, and did on occasion, exert their prerogative to commandeer either space or the entire plane when the necessity arose. In spite of these difficulties which were willingly conceded because of the vital purpose responsible for them, passenger traffic and air mail continued to increase and the volume of freight in the latter half of 1942 closely approximated that of the comparable period in 1941. Today the demand for service by air is so great that freight, like passengers, is subject to priorities and air mail is expected to be similarly treated in the near future.

Of the various factors responsible for this vastly expanded traffic, speed was unquestionably the greatest. How many times the speed of air express figured in

(*Continued on page* 74)



Aerial development and the necessity of speed have combined during the present war to bring a heavier load on the commercial air lines, as on the other carriers, than they have ever known previously. With planes, and consequently space, at such a premium, air freight is now subject to priorities and must often be handled many times more than usual. This, together with high altitude flying and quick temperature changes makes it essential to provide adequate packing. In the scene at top a Pennsylvania Central Airlines plane is being loaded with the care necessary for much of the airline traffic while in the picture below an Air Express car is waiting to rush to their destination the packages just received by plane.



PERFECT SHIPPING— The RAILROADS

THIS month brings the seventh annual renewal of the Perfect Shipping campaign.

When the Shippers Advisory Boards—back in 1937—decided upon APRIL as the month to go after the faults and frailties of shipping, they chose a logical time of the year, because this is the season of house cleaning, and that is what the Perfect Shipping campaign is — an intensive Spring overhauling and renovating—with sharper attention to a whole lot of things that need doing.

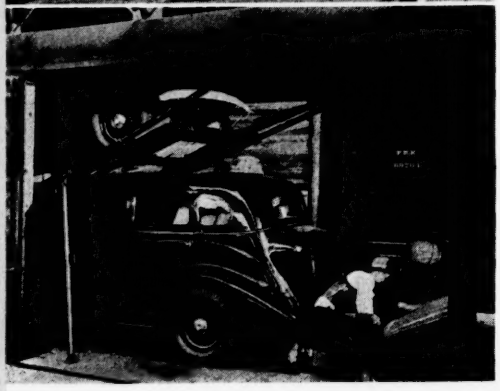
The matter of shipping always has been an essential part of the businesses of producing, marketing, and merchandising. Shipping calls for transportation. It might be argued that transportation is the business of the carriers, but a closer look had caused some folks and firms to wonder whether shipping wasn't the business of the transportation agencies *and the shippers.*

It was not difficult to find ways to make this idea work wonders for the cause of better shipping. Acting upon the first-things-first principle, factories and plants found some things that could be done—and were done forthwith—to make their goods considerably safer for shipment. They found that better packing of their products raised the percentage of safe delivery to a surprising extent. This turned out to be easy on the raw materials; it was good in a merchandising way; tough for the competition. And—tested in the reliable profit-motive crucible—it paid out.

Improvement in methods and practices affecting the preparation of goods for shipment speedily received great impetus. It went all the way back to research in packaging, and was extended to include more research in the realm of better loading. Executives of firms, plant superintendents, shop foremen, sales managers, traffic managers, packing department personnel and shipping clerks got the feel of responsibility for the condition in which their products reached the point where they could be sold and used.

Everybody pitched in. Receivers of freight quickly caught on. They benefited when goods reached them in saleable shape the first time. They aided through forthright efforts to help discover the causes of damage.

Railroads studied, and worked harder to correct their faults all along the line. Better handling in freight houses, marked improvement in the loading and stowing of l. c. l. freight, greater attention to the safer switching of cars . . . all these things followed. With enthusiasm, railroads joined the shippers in their crusade against loss, damage, waste.



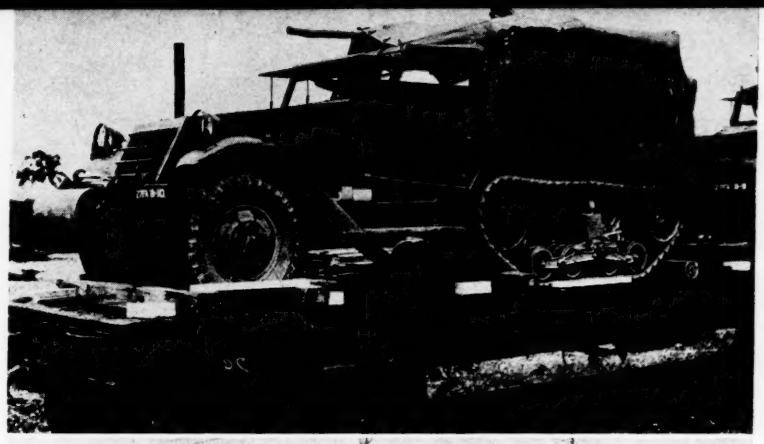
Above—A seemingly endless train loaded with tanks from the production plant provides an inkling of the huge burden placed on the railroads in this war to carry munitions and other supplies from point to point and from camp or depot to places of embarkation. Yet this is being done in addition to keeping the civilian population supplied with essential goods. Left —These peacetime scenes contrast vividly with those on the opposite page. At the same time it is more necessary than ever before that no damage or loss should come to the materials now being transported.

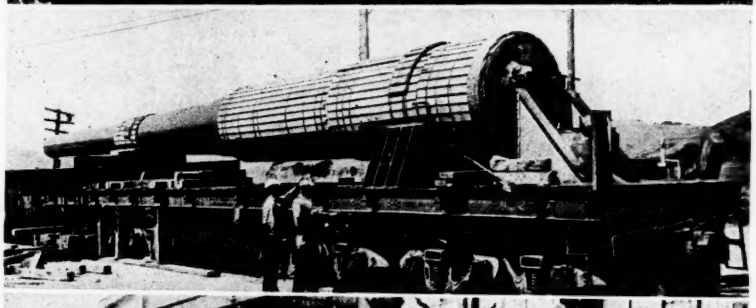
By

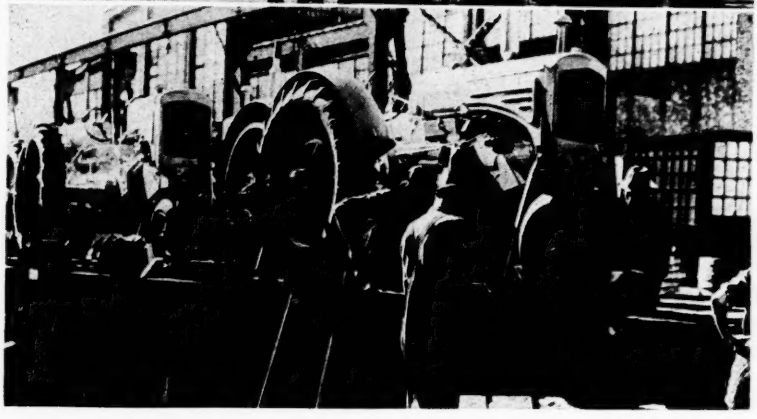
J. J. Pelley

President
Association of American Railroads

The three pictures at right are typical examples of the equipment now being carried by the railroads. In addition to showing variety, they also show the care that must be exercised in securing the articles to the cars. Such items when shipped overseas must, of course, usually be crated and while this may simplify matters for the carrier, it imposes a great responsibility upon the shipper to see that vital parts are thoroughly protected and the entire product adequately braced.







The Perfect Shipping campaigns have been responsible for a clear gain for all concerned through the avoidance of waste of materials, minutes, manpower and money. But of even greater significance—out of a better understanding of the other fellow's job, a keener comprehension of the problems which are inherent in the shipping procedure, and a recognition of the fact that what helps one helps all—backed up by a vast amount of effort which has been put behind the undertaking — the shipper-carrier-receiver partnership has been strengthened.

How well, and vitally, this partnership has functioned under the responsibilities of war has been plainly demonstrated by the transportation achievement resulting from the heavier loading, and the prompter loading and unloading of freight cars.

This year the "Perfect Shipping" campaign has a new and deeper meaning than ever before. Almost all goods are War goods. Almost everything can be looked upon as a weapon—food, clothing, materials and supplies of all kinds, no less than actual arms and munitions.

The preparation of goods for shipment presents new problems because much of it goes overseas. It not only travels farther, but is subject to more risks, more transfers, repeated handling from train to ship, from ship to barge, and barge to truck; exposed to uncommon hazards of weather conditions and salt water; of desert or jungle—finally to land at a supply dump where adequate facilities for protection do not exist.

It is important to remember that everything we produce requires the use of material, minutes, money and manpower. If, in other times, we could afford to rely upon "replacing" goods lost or damaged—we can't do it now. You can't send back over 3,000 miles of ocean for another piece or part. You *can't* replace material, minutes, money or manpower, except by using more of it . . . and under present circumstances America has none of these to waste. Under the grim responsibilities of war we can't afford to do things over again.

We cannot afford to waste transportation—which is likewise a weapon. The exigencies of war necessitate the fullest utilization of our transport plant and facilities. The Railroads are fully alive to this necessity. They are working as they never worked before; getting more service out of every freight car and every locomotive than at any other time in history; and it is due in large part to the skillful and wholehearted cooperation of the shippers.

Baltimore Shipyard Receives "M" Award

The Bethlehem-Sparrows Point Shipyard, Inc., of Baltimore, Maryland, has received the "M" award of the United States Maritime Commission in recognition of its outstanding performance in tanker construction.

Admiral Howard L. Vickery, vice chairman of the Commission, in a ceremony at the yard, presented the "M" pennant and the Maritime flag to the company.

The award marked a milestone in the Commission's history as it was one of the first to be given a yard engaged in production of long range ships.

In making the award, Admiral Vickery paid high tribute to harmonious labor-management which he said had aided materially in making possible the company's record. He reminded his listeners that the shipyards of the country are expected to produce 19,000,000 tons deadweight of shipping in 1943, compared with a little more than 8,000,000 tions produced in 1942.

PERFECT SHIPPING—
By TRUCK

By

TED V. RODGERS

President, American Trucking Associations, Inc.

IN past years perfect shipping usually has meant proper packaging of articles for shipment, with only secondary emphasis upon prompt handling and maximum loading and with virtually no emphasis at all upon selection of shorter routes.

Today the picture has changed radically. Although proper packaging is still of great importance, every effort must now be directed toward maximum utilization of the constantly diminishing transportation facilities available.

Approximately 15 per cent of the Nation's annual transportation bill is paid to the trucking industry. This bill covers the transportation of comparatively high grade traffic — manufactured articles which are now irreplaceable and, military materiel, the prompt delivery of which is essential. The trucking industry is delivering these goods—quickly, and to many thousands of communities and war plants not directly served by any other transportation agency, and the success or failure of our war effort may depend, far more than many realize, upon its continuing to do so. Diversion of this traffic to other available means of public transportation would cast a burden on all traffic—one which could scarcely be absorbed, and would seriously delay and impair our military and civilian production.

But the trucking industry, like all other industries is confronted with the problems of depleted personnel, inexperienced help, shortage of equipment and governmental restrictions. Scarcely any new automotive equipment is available, likewise replacement parts are at a premium. Tires are more precious than gold.

Federal agencies have required (with certain exceptions) that trucks shall not go out with less than capacity loads, that freight shall be turned over to other carriers if necessary to maintain the prescribed minimum load requirements, and strong movements are afoot to limit truck hauls to two or three hundred miles.

Many articles manufactured in peacetime are no longer produced; many new articles are moving in their stead as a result of the war. These changes have seriously disrupted normal traffic conditions and daily present new problems to the carrier.

New forms of shipping containers are being used as substitutes for packing materials formerly used, but now no longer available.

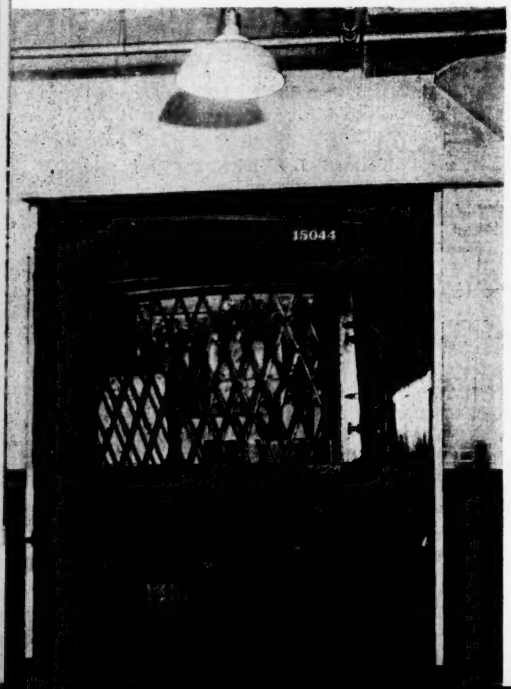
These many new developments call for closer cooperation between shippers and carriers than ever before. They call for new and closer examination into the adequacy of shipping containers, for damaged freight may be irreplaceable. They call for carefully planned loading and receiving schedules so as to avoid unnecessarily tieing-up equipment. They call for consolidation of shipments so as to assure maximum loading.

These are not idle suggestions. These things must be done. We are in an all-out war. If we do not voluntarily make this all-out effort, the government may step in and take over the job.

The motor carrier industry is making every effort to adapt itself to these new conditions. The shipping public is doing likewise. The only purpose of this discussion is to point the way to additional possibilities for improvement.

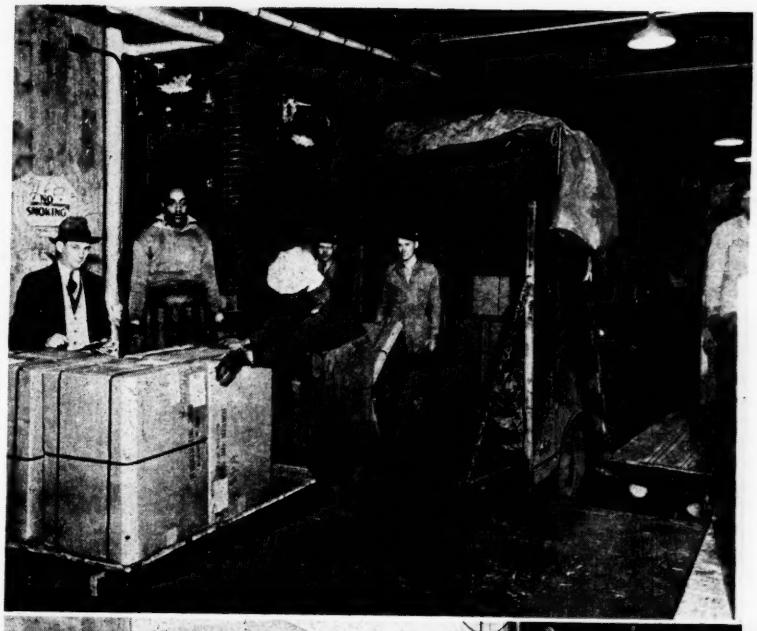
For example, the War Production Board has ordered a 10 per cent reduction in the use of paper. This does not mean that where paper has previously been used as packing, no packing should be used. The Nation will have benefited little if a pound of paper is saved and a valuable machine is damaged for want of proper packing. Similarly, in the case of metal straps, there are many cases where fewer metal straps can safely be used, but this does not mean that the use of metal straps should be indiscriminately abandoned. Each case should be judged on its own merits, for there is little profit in saving a metal strap at the expense of delaying a vital machine part. In the selection of new or revised shipping containers to replace old ones, no longer available, it is more important than ever to be sure that the container selected will do the job.

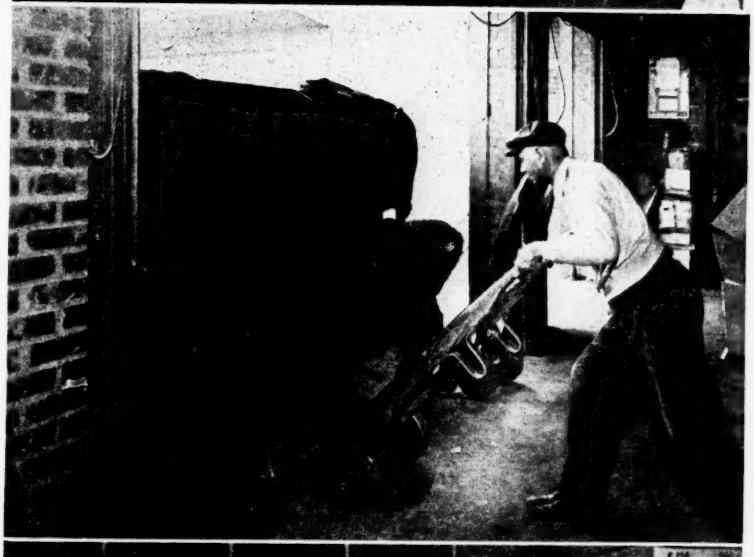
An example of imperfect shipping which was recently called to attention involved a shipment of canned goods—now "canned" in



One company, having discovered the costly results of slow or frequent handling and improper packing, has provided a giant elevator where trucks drive in and are taken to the third floor where merchandise is unloaded for storage or routing.

The receiving platform, such as that shown at top right, affords an excellent vantage point from which to view the packaging, loading or unloading and where careful checking should be done. Note the metal-bound cartons and the fact that the platform height is right for the truck tail gate while the checker is right on the job. In the center view is seen what happens when hand trucks are used to jam the bottom carton into place—the container is crushed and usually the contents resulting in a loss of goods and damage claims. Bottom—Here are examples of how NOT to pack. Two containers that didn't make the grade were (left) too heavily and loosely loaded and (right) used once too often.





glass containers for the duration. It had always been the custom of the loaders to roll a stack of cases into the truck, tip the entire stack off the dolly and then ram the load in tightly by driving the bottom case in with the dolly. Previously this resulted in a few dented cans, now it results in a few broken glass jars, and the breaking of some jars in the bottom case so weakens it that the remaining jars are seriously imperiled.

Another type of problem frequently encountered is that of the shipper who calls for a truck and then does not have his shipment ready when it arrives, or who cannot accept freight when it is tendered, necessitating one or more re-delivery trips. Gas, oil, tires, equipment and personnel are too precious to waste. Situations such as this can be avoided by proper planning. The welfare of our country, as well as our own individual welfare, is at stake. This is a problem which can be solved easily and it must be solved.

However, another example recently brought to attention, dealt with a shipper who was too prompt in loading. He was more interested in clearing his platform quickly than is assuring safe transportation of his merchandise. This may sound unbelievable, but it is a fact. The carrier involved advises that when the truck arrives, hand trucks stacked with miscellaneous packages are wheeled out and when the driver attempts to check the freight, this delay is viewed with antagonism by the shipper. Safe loading, as well as future protection in connection with claims, requires that the loading operation be undertaken with care and with

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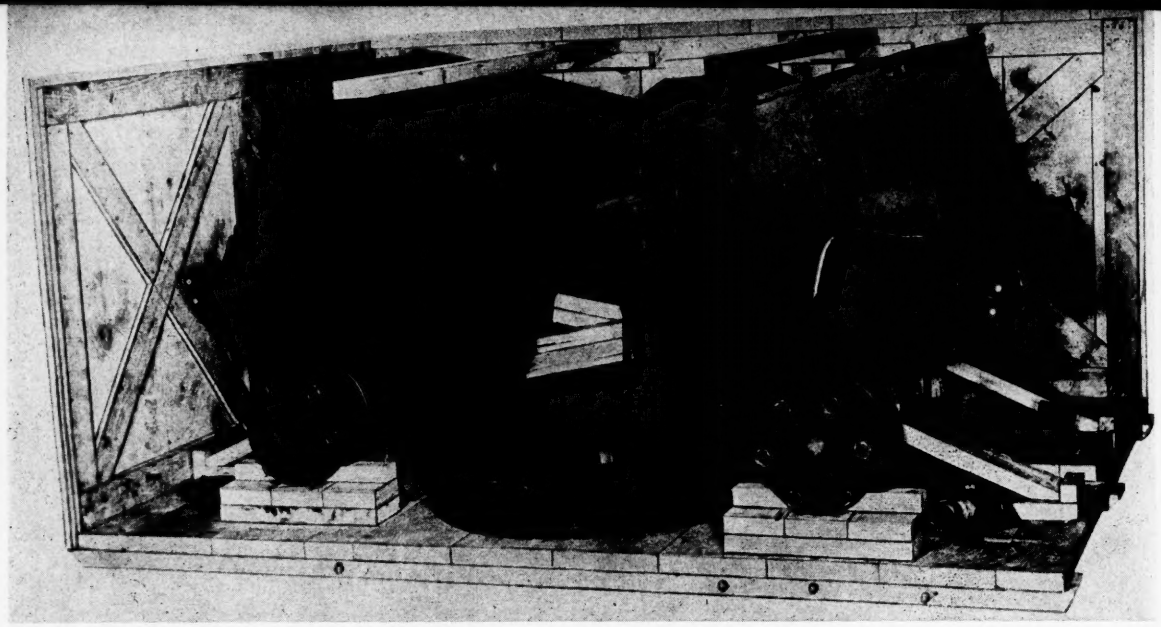
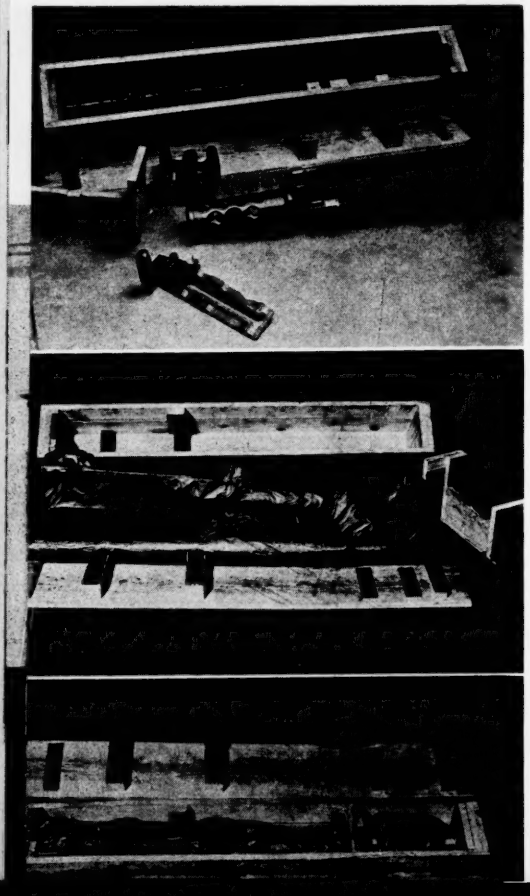


PERFECT SHIPPING—— The PACKING

OVER and above the noise of bursting bombs and shells could be heard occasionally the sound of voices coming from across the water, "O.K. boys, let 'er go." Then followed a splash as one more package was dropped into the water.



The place was Guadalcanal. The job was that of unloading supplies.

Here, as in so many other places, docking facilities were completely lacking, and the water so shallow that ships were obliged to stand well off from the shore and unload their precious supplies onto lighters. Tank and other similar loading barges had not yet arrived, and it was quickly found that the water was too shallow for even these lighters to come close inshore. But, both lighters and ships had to be unloaded promptly—it was an unhealthy spot in which to linger long and the supplies were too urgently needed. There was no alternative but to drop them overboard and have the troops push or porter them in under cover of darkness.

Now these supplies consisted of almost everything imaginable; how long they had been in transit and how many times they had been handled couldn't even be guessed at. But, of what use were these supplies, if they had failed to withstand such treatment? It doesn't require much imagination to visualize what the situation was. Yet this was but one of the countless such experiences the Army Transport has had since this war started. But they didn't need this experience to teach them how essential is perfect packaging, for with the war extending its operations to new points with almost each succeeding day, the number of problems arising in this connection has been almost stupendous. What complicated the situation was the fact that when a given product was ordered, or even shipped from the plant of the manufacturer, no one could tell what its final destination would be, or to what vicissitudes of climate and transportation it would be subjected.

Every normal protection was given to these goods at first, and much reliance was placed upon the ability of individual manufacturers to prepare the goods for shipment, especially in view of the fact that so many of these concerns had been shipping and exporting goods all over the world for many years. But there is no comparison between conditions today and those of normal times, and what may seem full protection in one instance often is useless in another. At the same time it had to be borne in mind that cargo space was at a premium and none could be wasted

In the picture above is seen an example of proper crating where two caissons are securely packed and their draw-bars interlocked to save space. At left are shown three progressive stages in the packing of a machine gun. Note the bracing in both instances.

on excessive package protection. Let's take a good look at some of the problems involved.

In shipping any metal products across the ocean, it has been known for ages that sea water and air had a corrosive effect, so when the guns required for mounting on airplanes were sent overseas they were covered with a heavy coating of grease. Arriving at their destination they were cleaned as thoroughly as possible. Unfortunately, however, it had been overlooked that particles of the grease could and would find their way into intricate and obscure parts, so that when the planes reached thirty or thirty-five thousand feet the crew were sometimes dismayed to find their guns misfiring. Those particles of grease had frozen at those high altitudes. That difficulty has now been solved—a different kind of grease is now employed, as well as other means of protection for vital parts before the whole is placed in a pliofilm vapor proof bag, dehydrated with silica gel to overcome condensation. That solved the problem perfectly, but unfortunately pliofilm itself soon became scarce and suitable substitutes are limited. Now such bags are reserved for only the most important and highly vulnerable parts.

While talking of metal materials, it may be of interest to learn that such things must be thoroughly cleansed before the necessary grease is applied, for even the moisture from finger prints under the grease can cause irrevocable damage within a remarkably short space of time.

Of course not all items with metal parts must be so treated, for often their covering of paint is adequate for the purpose to which these items will eventually be put, while in other instances a small amount of corrosion has no especially detrimental effect. On the other hand, there is an extraordinary number and variety of products that must be given full protection. If shovels are packaged in conformity with War Department requirements, they will require little or no protection. On the other hand, the vital parts of a tank engine and its guns must be given the fullest protection possible.

In the five pictures at right can be seen what happens when materials are insufficiently or improperly packed and poor loading has been done.

This sometimes means the complete crating of even the largest tank to be shipped. Then take the example of a wrecking truck. If each one of those were crated they would require half a carload of lumber each, consequently full protection has had to be worked out for the chassis and engine alone. To crate these trucks would consume quantities of lumber that can ill be afforded, and it would take more space on a ship than can be spared.

Then there are the consequences incident to transportation through a variety of different climates and temperatures. Even in this country it is likely that an article will be subjected to several very different temperatures from the time it leaves its point of origin until it reaches its destination. But what of those items transported by plane to other countries? Within the space of only a few hours they may be in climates ranging all the way from sub-zero to well over 100 degrees, and this not once, but probably several times.

Or, take the example of the Burma Road, where, through valleys and over passes, more than one caravan of transports has ranged through extremes of temperature often exceeding more than 100 degrees four or five times within twenty-four hours. Yet the item transported must arrive in useful condition to say the least. Transportation is too difficult and goods too scarce today for there to be any loss. If we could arrange for all the imperfect or improperly packed goods to be on the truck that is bombed, or the ship that is torpedoed it might not be so bad, but it seldom works out that way.

To get over these difficulties considerable attention is paid to the best packaging conceivable, but it is seldom that a problem is solved completely or for very long. A new country for destination, a new use of the material or scarcity of the packaging material itself may completely resuscitate the old problem.

Take the matter of lumber used in crates. For preference it is rec-

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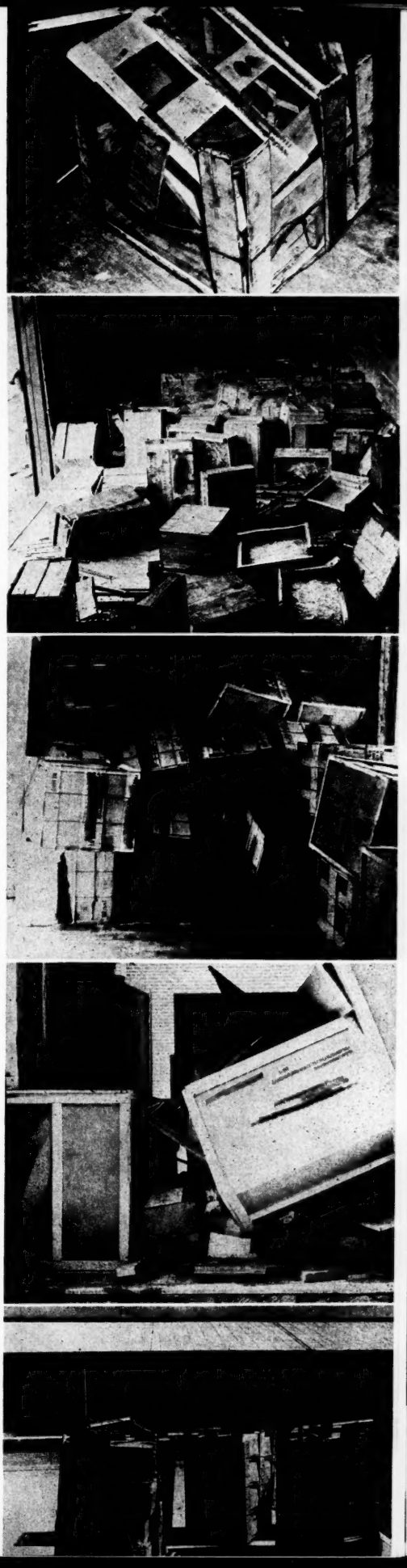
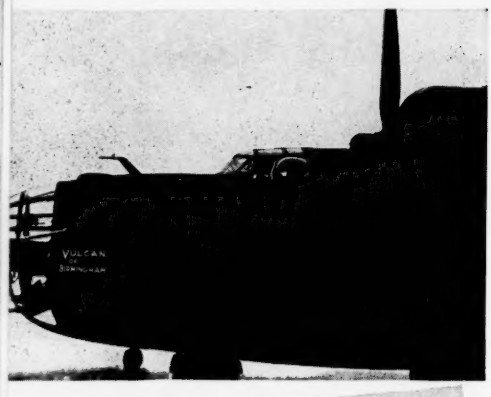


NEW BOMBER PLANT STARTS OPERATIONS IN ALABAMA



Top—The first B-24 Consolidated Liberator bomber completely modified at the Bechtel-McCone-Parsons Corp. modification center in Birmingham, which was christened "Vulcan of Birmingham." Top center—Mrs. Madeline Tinker, widow of Major-General Clarence L. Tinker, who was lost in the battle of Midway, christening the first four-motored bomber. Lower center—Principals in the christening were: Mrs. Tinker, Ralph M. Parsons, Vice President, Bechtel-McCone-Parsons Corp.; Mrs. James E. Duke, and Diana Duckworth, daughter of Major H. S. Duckworth. Bottom—Major Hugh Duckworth, accepting the plane for the Army Air Forces from Perry Yates, manager of the Birmingham plant.

APPROPRIATELY named "Vulcan of Birmingham," the first bomber to be completed at the $14,000,000 modification plant in Birmingham, Ala., was christened recently amidst impressive ceremonies before being turned over officially to the Army Air Forces.

Completion of this plane was a signal accomplishment in view of the fact that, though not quite finished, the huge plant was actually in production only 61 days after the ground was first broken. That 96 per cent of the employees were engaged locally is a tribute to the ability and adaptability of Birmingham people.

This particular modification center, built and operated by the Bechtel-McCone-Parsons Corp., is designed for the specific purpose of making B-24 Liberator bombers immediately ready for active service, and the start of its operation marks another important step in this country's mass production of bombers and fighting planes.

The general purpose of this and other modification centers, which service both Army and Navy planes, was clearly defined by John A. McCone, president, when he said:

"The entire plan of the Army Air Forces has been one of mass production and assembly lines and without the use of this modern development of American industry the job simply could not be done. Assembly line production, however, means in airplanes just just what it means in automobile manufacture. That is, every unit of a series comes off the line a duplicate of the unit in front of it and the unit behind it. Attempts to change any particular unit inevitably interferes with and stops the entire production line—the sequence is lost and the plan fails. Changes, therefore, can only be made periodically, just as the changes in automobile models are traditionally made each year.

"However, two facts soon developed. First, the airplane needs of the various battle fronts are different. The planes to operate in Africa are different from those to be operated in Alaska and those to be operated in Alaska differ from those to be operated in the Solomons. Features that are an advantage to a machine in one geographical location are not needed or may be a dangerous addition to the same machine operated elsewhere.

"Secondly, as the machines are put in combat service, opportunities for improvements become apparent to the pilots, the engineers and the commanding officers. Additional or different types of guns or gun turrets or armor plating and changes in mechanical features develop only after ships have seen actual combat service.

Of course, once these improvements become obvious, it is the desire of the Army Air Forces to incorporate them in every single machine, if possible. To do this, however on the planes as they are being manufactured would clog up the assembly lines and des-

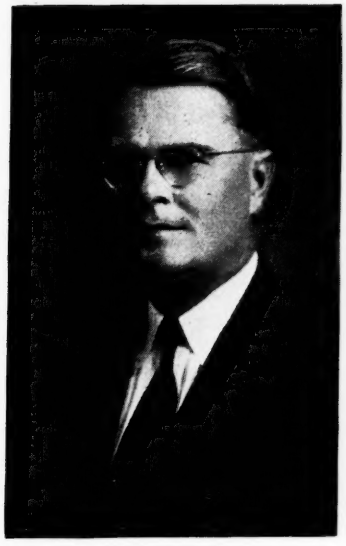
(Continued on page 70)

CROSSROADS DEMOCRACY

By

HON. FRANK M. DIXON

Former Governor of Alabama



Hon. Frank M. Dixon

BEGINNING in the early thirties, a new engine of acceleration of the drift toward centralization of power in the federal government was created, by the abandonment of the old principles of state aid through state agencies, short-circuiting the state governments and substituting therefor direct grants to cities and to individuals through local agencies of the federal agencies involved. Witness the WPA and nearly all alphabetical agencies since that time.

The system was conceived and installed for the purpose of obtaining final political control, striking down local governments and bringing home to the people who thought that their allegiance must be to the Washington bureaucracy rather than to their own elected officials. This was perfectly normal. Men are ambitious and they have always been ambitious. They always will be ambitious. It is perfectly normal for the federal bureaucrat to conceive of himself as being an invaluable servant of the people, and it is perfectly normal for him to calculate that the more power he secures for himself the greater service he can render. Again, from his point of view, security of tenure is better to be obtained where his master is in Washington, far removed from the demands and wishes and pressure of opinion back home. It is only human nature. But again it is only right for us to think of where this leads.

Democracy is not a thing of Washington. Democracy is a thing of the crossroads. It is at the crossroads that the people of this nation live. It is at the crossroads that their children are born, that they go to church on Sunday, that the schools are placed, that the average American citizen lives his life and is finally taken to his fathers. It is at the crossroads that the life of America takes place—not in Washington. All of those things that touch him most closely happen at the crossroads. The exercise of democracy is there. Let his local officials become overly ambitious and interfere with his rights, he knows it immediately and he acts. Let any local dictator seek to establish himself, he knows it immediately, and the methods and the means to strike that man down are in his hands. The base of democracy is there, there it will endure or die. There it is strong, tenacious of life, resistant to degeneration or decay. There it lives, resurgent, determined.

The typical bureaucrat and the heads of the various pressure groups which have become so powerful in our American life know this. They know it and they fear it. They know that if the world is to be changed from that American life which has made this nation great and to be molded in accordance with the pattern of some crackpot reformer, it must be done away from the crossroads. It is for that reason that the typical bureaucrat and the typical head of the typical pressure group seek to concentrate all power in Washington, where they have to contend with one congress and not with forty - eight state legislatures, where the means of working their own end are far more easily reached.

There are all manners of thought in Washington. There are those who sincerely believe that the American competitive economy is a flat failure, which should immediately be replaced by socialistic government control. There are those who believe that the future welfare of the nation demands a government owned and dominated by organized labor. There are those who sincerely believe that organized labor has no right to exist. There are those who would go back to the old system of free enterprise without needed restraints, the abuses of which beyond any question brought on the needed social reforms of the New Deal. There are those who sincerely believe that all manner of ideologies should instantly be enacted into law. And the efforts of these groups, concentrated in Washington today have, in my opinion, fed more that confusion which is essentially part of a democracy going to war than any other single factor. It was the national impatience with this type of confusion which, in my opinion, caused the overwhelming defeat of the democratic candidates in the last election. It is this type of confusion which, if not dealt with, as long ago it should have been dealt with, is likely to cause the defeat of the next democratic candidate for President of the United

(*Continued on page* 70)

HUGE BOMBER PLANT NEARS COMPLETION IN GEORGIA

ONE of the world's largest and most modern aircraft manufacturing plants is nearing completion on the outskirts of Marietta, Georgia, only 15 miles from Atlanta.

For military security reasons, only general information as to the size of the plant can be given. The main assembly building is large enough to house the nation's total annual cotton crop of more than 10,000,000 bales; nearly a mile of freight cars can be spotted inside or a number of football games could be played simultaneously in the main assembly bay while several three-ring circuses gave performances.

The project has absorbed enough structural steel, lighting, heating, ventilating, paving and drainage materials to build a city. The fuel storage pits are big enough to require a bulldozer to shape up the coal stacks. Probably the world's largest door closes one end of the main assembly bay.

The plant is heavily insulated and windowless throughout and the temperature can be controlled within a small range to insure precise work with metals. It is believed to have the best protection against power interruption in the country, for it can be tied into either one or all of several nearby electric power systems.

This giant government-owned plant, built under the direct supervision of the Army Engineer Corps, has come into being in less than 12 months from the day—March 30, 1942—when the first bulldozer moved onto the countryside. Thirty days prior to that, formal announcement had been made of the War Department's decision to establish a bomber plant in the Atlanta area and in the succeeding four weeks the site was selected, the plant was designed, a construction organization was assembled, and work begun. Little news of the war enterprise has sifted through to the outside world, but part of the story can now be told because, as an Army representative observed, "You can't hide an elephant in a cotton patch!"

Assembly building could house Nation's entire cotton crop for one year

Windowless plant heavily insulated with temperature control for precise metal work

When completed in all detail, the plant will be operated by Bell Aircraft Corp. of Buffalo and Niagara Falls, N. Y., builders of the Army's cannon-carrying Airacobra fighter. The company will manufacture long range, multi-engined bombers of a closely-guarded design for the Army Air Forces.

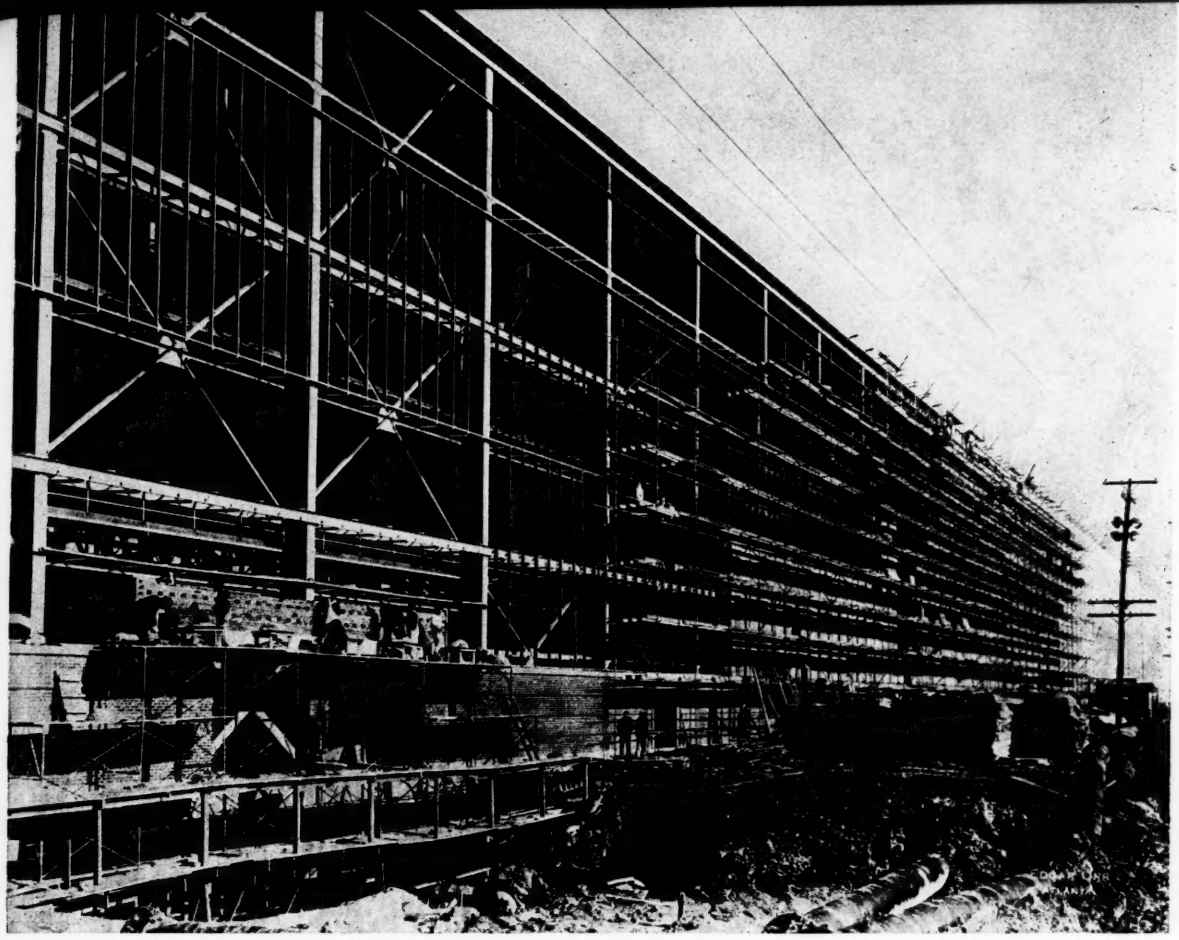
Outwardly the plant appears almost ready for occupancy but there will be a substantial period devoted to machinery installation and the integrating and training of thousands of workers before actual fabrication of the planes will begin. Also, since the plane is of an entirely new design, there will follow the usual period of testing and development of the prototype before the signal for all-out production is given. In view of these facts, no predictions can be made as to when the first plane will come off the assembly line. Furthermore, the production schedule and capacity are secret.

"In addition to meeting government production schedules for Airacobra fighter planes," Lawrence D. Bell, president of Bell Aircraft, said, "we have been working continuously for the past year on the bomber project. All of us are very proud over being chosen to operate this enormous plant. Located in an area which heretofore has had no aircraft manufacturing experience, we could not expect to find thousands of people skilled in airplane manufacturing ready to go to work. Therefore, we had to plan the production ability of this plant with the most modern simplified methods of aircraft manufacturing conceivable today.

"The Atlanta area is ideal for this mighty program and we have had wonderful assistance from it throughout the past year. Leading business and civic authorities here believe that the advent of the aircraft manufacturing industry into this section will be permanent and we in Bell Aircraft share this view."

The adjoining airport, owned by Cobb County of which Marietta is the county seat, is being further developed by the Army Engineers. It is operated by Georgia Air Service, Inc., of Atlanta, and will rank with the best in the country from an operational viewpoint when the extended runways are completed.

Scores of primary contractors



The huge bomber plant consisting of several buildings, one of whose sides is shown in the picture above, has absorbed enough structural steel, lighting, heating, ventilating, paving and drainage materials to build a city. The fuel storage pits are big enough to require a bulldozer to shape up the coal stacks. Perhaps the best indication as to size of the main assembly building can be obtained from the fact that a number of football games could be played simultaneously in the assembly bay while several three-ring circuses gave performances.

and hundreds of sub-contractors are driving the plant to completion under supervision of the Army Engineers and Robert & Co. Associates, architects, engineers and managers, of Atlanta.

Several hundred technicians were employed in the Atlanta area last summer and sent to Buffalo and Niagara Falls to study Bell Aircraft's factory methods. They recently returned to Atlanta and are the nucleus of an organization which will teach many thousands, a great percentage to be women, when actual production gets under way. Four schools are in operation in Atlanta and Marietta providing training in basic aircraft work.

While it is expected that the majority of the employees will be drawn from permanent residents of the Atlanta area, a housing program for those from more distant points is underway at Marietta. Most of the units will be within easy walking distance of the plant. The workers living in Atlanta will travel by bus, automobile and interurban electric cars. Two highways now connect the plant with Atlanta and a third is under construction crossing a new bridge now being built over the Chattahoochee River. Highway approaches to the factory are being established to handle 100 buses a shift and if necessary, four 12-car interurban trains can be quickly unloaded near the tunnel entrances to the plant.

The final phase of the plant construction job is now under direction of Major William A Freret of Louisiana, who succeeded Lt. Col. H. C. Gerdes of California, when the latter was transferred early in February. Major Freret served as assistant to Col. Gerdes and to his predecessor, Lt. Col. E. Randall, Jr., of Pennsylvania, who inaugurated the construction work and carried it half way to completion before being assigned with troops. The entire project comes under the general supervision of Col. R. E. York of Colorado, Atlanta District Engineer.

The size of the project tested the descriptive power of Hervey Allen, the noted author, who, coming suddenly on the factory as it loomed out of a frosty ground haze, said he experienced an "emotional shock."

"To look at the plant from a distance," he declared, "is to experience an emotional shock, a positive excitement due to running across quite casually in the landscape of ordinary experience something that is on an unprecedented scale — huge, vast, gargantuan, enormous. It is as though one had suddenly come across the architecture of a people from another and larger planet — people used to doing things on a scale that dwarfs the familiar buildings and dwellings of mere earth-men."

SOUTH'S MARCH CONSTRUCTION CONTRACTS NEAR $212,000,000

SOUTHERN construction quickened its pace in March as flagging industrial and government activity strengthened to boost the total of contracts awarded to $211,760,000, or more than double the figure for the short month of February.

Much of the increase was for new or expanding industrial construction, specific details of which are not available for wartime publication. The March total for this type of work was $80,103,000, as compared with February's $13,881,000.

Public building and engineering also contributed substantially to the rise. The March figure for public engineering was $48,060,000; that for February $15,702,000. Public building was up almost fourteen million dollars over the $58,249,000 total for the preceding month.

Highway contracts gained. The March total of $9,687,000, which is a twenty-four per cent increase over the $7,782,000 for February, is the highest total for work in this field since December. Drastic regulations curtailing highway and bridge construction, except certified access and war projects, are still in force.

Studies of the current March figure and that for the same month of last year show 1943's third month to be about forty-six per cent below the $395,103,000 of the third month of 1942, when public building alone amounted to more than the entire figure for the current March, private building had not yet dried to a bare trickle and road work was almost double its present level.

The current March figure represents almost one-half the $448,241,000 aggregate of contracts below the Mason and Dixon line, as compiled from reports to the MANUFACTURERS RECORD for projects involving $10,000 and over. Totals for January and February, making up the balance of the current first quarter figure, were $132,979,000 and $103,502,000 respectively.

Month's total is more than double the February figure

By

S. A. LAUVER
News Editor

Comparisons of the accumulation of contracts let so far this year and that for the first three months of 1942 bear out forecasts by prominent authorities that the volume of domestic construction would not equal that for the last two years, but that it would be above normal. Last year's first quarter saw awards of $931,059,000.

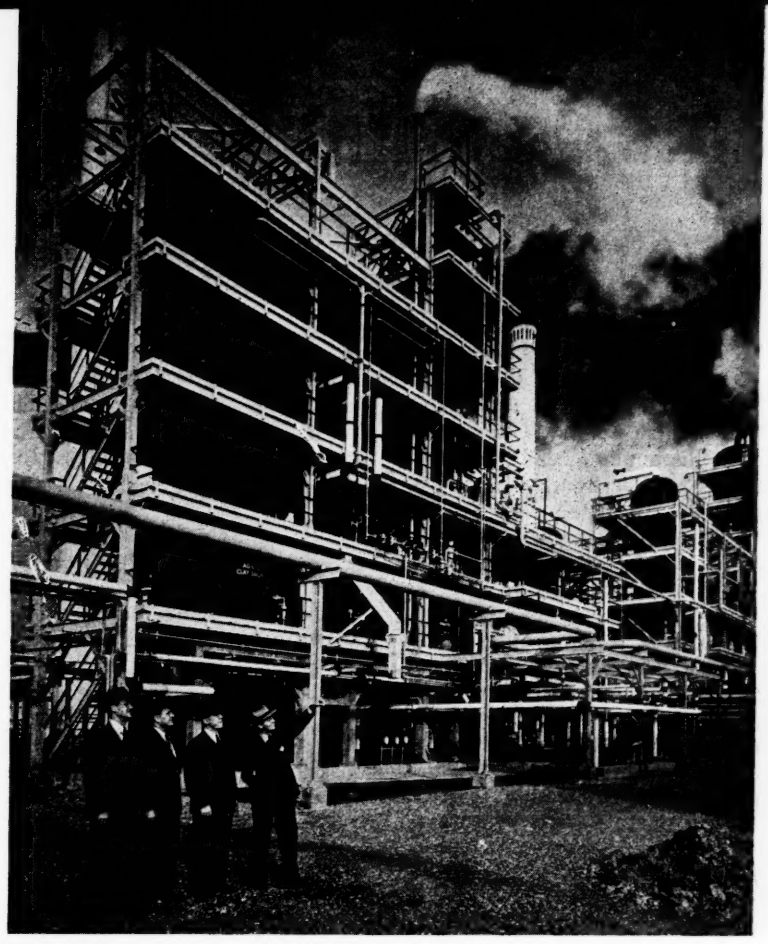
The first quarter average for the years in the decade preceding war boom inflated 1941 and 1942 was $154,189,000. While that ten-year period included the three depression years when Southern construction was below or hardly above the five hundred million dollar mark, it also embraced such years as 1936 and 1939 when totals approached one billion dollars, and 1940 when that level was passed in the South for the first time.

Current first quarter totals of the various types of work, in the order of their value, were $220,892,000 for public building; $103,608,000 for industrial construction; $82,395,000 for engineering projects; $26,434,000 for roads, streets and bridges, and $14,912,000 for private building.

Southern construction by types followed the same general pattern in the first three months of last year, except that the highway construction and private building totals were reversed. Government

South's Construction By Types

	March, 1943		Contracts Awarded First Three Months 1943	Contracts Awarded First Three Months 1942
	Contracts Awarded	Contracts to be Awarded		
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums Fraternal)	$185,000	$275,000	$390,000	$1,929,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	20,000	125,000	131,000	2,611,000
Residential (Apartments, Hotels, Dwellings)	1,693,000	1,400,000	14,371,000	44,103,000
Office	10,000	.....	20,000	572,000
	$1,908,000	$1,800,000	$14,912,000	$49,215,000
INDUSTRIAL	$80,103,000	$2,500,000	$103,608,000	$149,256,000
PUBLIC BUILDING				
City, County, State, Federal	$45,095,000	$37,343,000	$136,850,000	$494,511,000
Housing	25,691,000	57,395,000	80,723,000	80,200,000
Schools	1,216,000	3,678,000	3,319,000	11,789,000
	$72,002,000	$98,416,000	$220,892,000	$586,500,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$43,421,000	$94,359,000	$70,692,000	$83,881,000
Federal, County Municipal Electric	602,000	.....	1,477,000	8,687,000
Sewers and Waterworks	4,037,000	12,824,000	10,226,000	19,430,000
	$48,060,000	$107,183,000	$82,395,000	$111,998,000
ROADS, STREETS AND BRIDGES	$9,687,000	$13,252,000	$26,434,000	$34,090,000
TOTAL	$211,760,000	$223,151,000	$448,241,000	$931,059,000



The largest plant yet in operation for making synthetic rubber raw materials is now in full-scale operation at the Baton Rouge refinery of the Standard Oil Company of Louisiana, an affiliate of the Standard Oil Company (N. J.). Here a group of company officials are shown inspecting this new butadiene plant, which will process enough of this vital raw material to produce rubber for 1,300,000 to 2,000,000 tires annually.

bureaus have since regulated these two activities so closely as to make them vie for last honors on the list.

Construction activity broadly follows the vagaries of war. When additional military facilities are needed, it is the country's contractors who are first on the job. If more industrial output is required, again the construction forces build the structures to house the machines that turn out the raised production.

The $80,103,000 March valuation for industrial construction was larger than for any other month since last July. Engineering contracts in March were higher than levels back to June of last year. This latter increase was largely due to accelerated earthwork construction, particularly airports.

Industrial

(Including Private Utilities)

	March, 1943		
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Three Months 1943
Alabama	$125,000	$.....	$3,525,000
Arkansas	325,000	75,000	3,555,000
Dist. of Col.	750,000	.....	750,000
Florida	903,000	.....	4,057,000
Georgia	213,000	200,000	343,000
Kentucky	6,620,000	30,000	8,332,000
Louisiana	1,345,000	585,000	1,460,000
Maryland	2,877,000	290,000	3,525,000
Mississippi	.....	35,000	101,000
Missouri	2,502,000	.....	3,622,000
N. Carolina	50,000	105,000	2,045,000
Oklahoma	.....	.....	370,000
S. Carolina	.....	150,000	344,000
Tennessee	128,000	270,000	993,000
Texas	64,255,000	700,000	70,376,000
Virginia	10,000	60,000	65,000
W. Virginia	.....	.....	135,000
TOTAL	$80,103,000	$2,500,000	$103,608,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, etc.)

	March, 1943		
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Three Months 1943
Alabama	$695,000	$880,000	$3,343,000
Arkansas	1,200,000	995,000	3,276,000
Dist. of Col.	30,000	100,000	71,000
Florida	4,798,000	68,946,000	11,309,000
Georgia	2,292,000	2,515,000	4,112,000
Kentucky	.....	.....	1,075,000
Louisiana	1,705,000	3,990,000	4,079,000
Maryland	14,959,000	15,586,000	15,702,000
Mississippi	325,000	1,851,000	1,887,000
Missouri	.....	356,000	50,000
N. Carolina	778,000	2,375,000	2,240,000
Oklahoma	1,260,000	1,210,000	4,160,000
S. Carolina	982,000	1,902,000	1,047,000
Tennessee	385,000	1,690,000	2,295,000
Texas	18,260,000	4,587,000	26,886,000
Virginia	391,000	200,000	863,000
W. Virginia	.....	.....	.....
TOTAL	$48,060,000	$107,183,000	$82,395,000

Public Building

(City, County, Federal; Housing; Schools)

	March, 1943		
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Three Months 1943
Alabama	$4,039,000	$3,711,000	$8,063,000
Arkansas	2,610,000	2,970,000	11,341,000
Dist. of Col.	448,000	1,175,000	1,267,000
Florida	6,100,000	7,865,000	20,671,000
Georgia	9,725,000	10,684,000	24,999,000
Kentucky	100,000	673,000	581,000
Louisiana	1,944,000	5,189,000	5,129,000
Maryland	3,206,000	14,140,000	14,374,000
Mississippi	2,672,000	5,704,000	8,720,000
Missouri	2,225,000	1,146,000	3,386,000
N. Carolina	1,204,000	2,272,000	7,654,000
Oklahoma	250,000	1,285,000	1,684,000
S. Carolina	9,076,000	2,808,000	14,297,000
Tennessee	1,303,000	910,000	18,351,000
Texas	12,681,000	31,890,000	47,176,000
Virginia	9,919,000	5,994,000	28,694,000
W. Virginia	4,500,000	.....	4,505,000
TOTAL	$72,002,000	$98,416,000	$220,892,000

South's Construction By States

	March, 1943			
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Three Months 1943	Contracts Awarded First Three Months 1942
Alabama	$5,513,000	$4,646,000	$17,334,000	$44,655,000
Arkansas	4,764,000	4,090,000	20,751,000	16,559,000
Dist. of Col.	1,455,000	1,365,000	3,068,000	19,589,000
Florida	13,801,000	77,011,000	40,607,000	40,936,000
Georgia	12,569,000	13,499,000	31,120,000	37,060,000
Kentucky	7,027,000	1,053,000	10,295,000	43,883,000
Louisiana	6,634,000	20,769,000	13,458,000	53,030,000
Maryland	23,176,000	31,076,000	39,609,000	63,618,000
Mississippi	2,997,000	7,590,000	11,028,000	13,455,000
Missouri	4,737,000	1,712,000	7,313,000	16,931,000
N. Carolina	2,412,000	4,852,000	13,028,000	53,823,000
Oklahoma	2,210,000	2,645,000	10,838,000	101,717,000
S. Carolina	10,127,000	5,035,000	16,187,000	23,819,000
Tennessee	2,501,000	3,015,000	23,114,000	96,833,000
Texas	96,784,000	38,094,000	155,471,000	135,831,000
Virginia	10,553,000	6,699,000	30,872,000	142,201,000
W. Virginia	4,500,000	.....	4,748,000	27,119,000
TOTAL	$211,760,000	$223,151,000	$448,241,000	$931,059,000

Roads, Streets, Bridges

	March, 1943		
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Three Months 1943
Alabama	$654,000	$55,000	$2,403,000
Arkansas	629,000	.....	719,000
Dist. of Col.	61,000	.....	513,000
Florida	2,000,000	200,000	4,275,000
Georgia	274,000	50,000	1,601,000
Kentucky	307,000	350,000	307,000
Louisiana	1,215,000	10,905,000	2,365,000
Maryland	1,273,000	250,000	3,249,000
Mississippi	.....	.....	.....
Missouri	.....	160,000	120,000
N. Carolina	275,000	50,000	969,000
Oklahoma	700,000	150,000	2,139,000
S. Carolina	.....	100,000	340,000
Tennessee	668,000	.....	1,293,000
Texas	1,468,000	847,000	5,482,000
Virginia	163,000	135,000	651,000
W. Virginia	.....	.....	8,000
TOTAL	$9,687,000	$13,252,000	$26,434,000

NEW ALUMINUM CASTINGS PLANT IN THE SOUTHWEST

COMPLETION of a foundry devoted exclusively to production of high quality, heat-treated cast aluminum aircraft parts in the heart of the Southwest has just been officially announced by Willard Storage Battery Co., with delivery of the first production of aluminum castings.

The story of how the Aluminum Castings Division of this company came to be established, and how this new activity—so entirely different from storage battery manufacure—was pushed to completion as an urgent wartime measure, provides an interesting commentary on the manner in which Management and Labor can and do join with Government, the Armed Forces and Civic Authorities to speed war production.

In the spring of 1942, Willard officials were told that production of airplanes in at least one great Southwestern aircraft plant was exposed to serious delays because no suitable facilities for production of high-quality heat-treated aluminum castings existed within several hundred miles of this and several other manufacturers of well known trainers, fighters and bombers. It was necessary to change the elapsed time between orders and deliveries of vital aluminum aircraft parts from days and even weeks to hours.

Plans were drawn up and approved by WPB and all interested parties. Actual work on the new foundry was started in late August. Everything had to be done from scratch—complete equipment ordered, manufactured and installed; supplies of aluminum obtained; adequate labor trained. It was the kind of job that could be accomplished only with the fullest cooperation of all concerned. That the job was not only done, but in less than three months, is a fine tribute to the abilities of all who were involved in the undertaking. Pilot production of test castings showed a quality well above the highest expectations of aircraft production inspectors. Actual quantity deliveries of heat-treated, X-ray inspected castings were begun shortly afterward.

At ceremonies marking delivery of the first castings to North American Aviation Company executives, local civic and government officials in the new plant area expressed thorough satisfaction. "This fine new plant," said one official, "is an excellent example of the kind of American management and team work that is daily swinging this war in favor of the United Nations. I don't believe Hitler and his gang can equal the great teamwork of inspired free men so thoroughly demonstrated in this delivery of aircraft parts we are witnessing here today."

Many of the personnel at the new foundry are women, some of whom have come from prosperous homes to undergo the special training necessary to qualify as skilled war production workers. The highly skilled work of making, heat-treating and inspecting cast aluminum aircraft parts has been broken down into jobs in which the aptitude of women for fine, painstaking craftsmanship can be fully utilized.

The production of storage batteries for tanks, jeeps, trucks, planes, ships and other vital requirements of Government and the Armed Forces, as well as automotive storage batteries for the civilian market—also recognized as vital to war transportation—is entirely separate from the new undertaking and continues at top speed in the company's other plants. Aluminum aircraft castings are being produced by additional personnel and with additional plant facilities.

Scene as the first heat-treated aluminum aircraft casting was delivered. Left to right: N. G. Wolf, Willard district sales manager; B. Critz, vice-president of the local chamber of commerce; H. B. Lockwood, manager of the new foundry; and D. L. Miller, North American Aviation.

War Contracts and Allocations to Southern States Total $19,618,847,000 Through December, 1942

Prime war contracts and allocations distributed by the various Federal agencies and foreign purchasing missions to the Southern states totaled approximately $19,618,847,000 for the period through December, 1942. This represents a gain of $802,717,000 for the month of December compared with an average gain of only $482,787,000 during each of the two preceding months. The amount for the South would in all probability be further increased if the $13,407,138,000, now included in the United States total and classified as "off continent and unassigned," were distributed among the various states.

United States contracts date only from June 1, 1940, but the contracts placed by allied nations started in September, 1939.

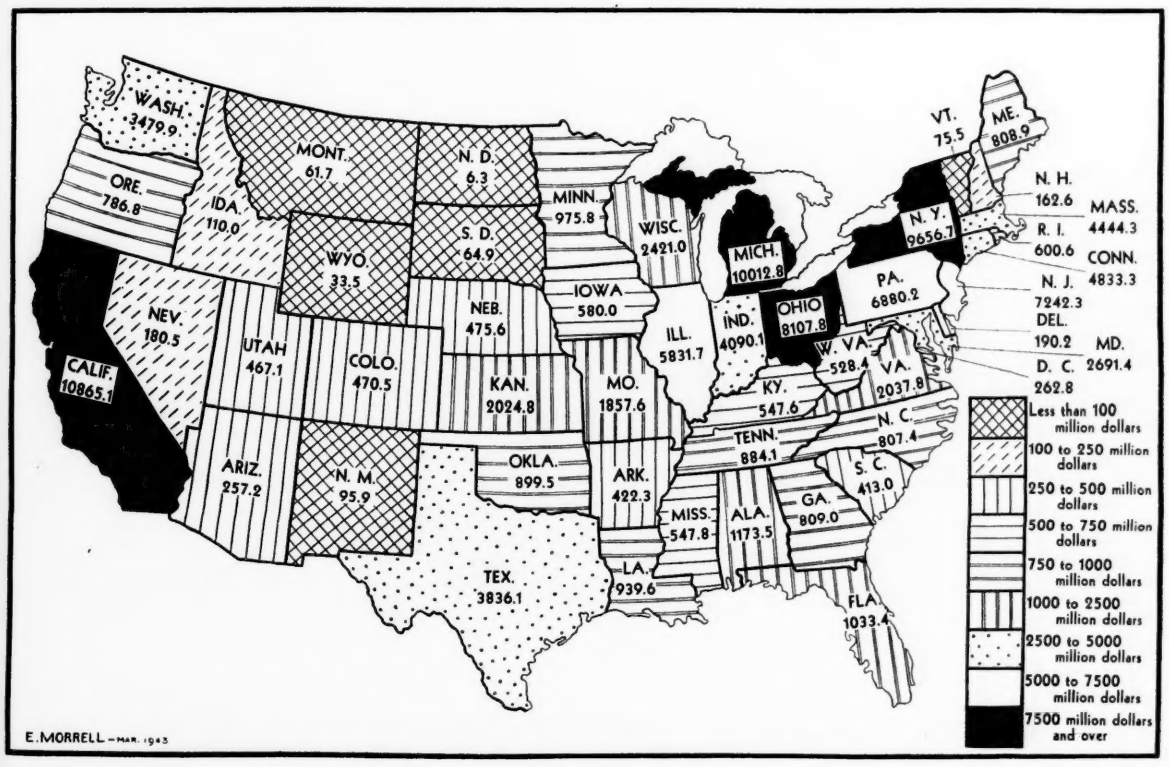
Awards for the Army, Navy, Maritime Commission and foreign purchasing missions do not include those for foodstuffs, nor do they include any contracts having an individual value of less than $50,000.

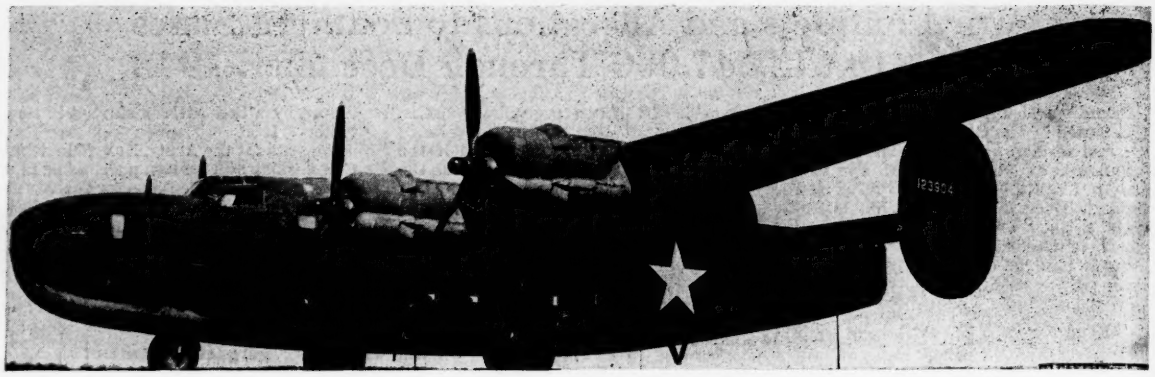
Major War Supply and Facility Contracts and Allocations, June, 1940 Through December, 1942
(Thousands of Dollars)

	Army, Navy and Maritime Commission										
	Supply Contracts			Facilities		Dept. of Commerce	National Housing Agency	Federal Works Agency	N.Y.A. and Office of Education	Dept. of Commerce	
	Aircraft	Ships	Miscell.	Industrial	Non-Industrial	C.A.A.	F.P.H.A.			R.F.C.	Total
Alabama	....	272,825	287,097	379,193	154,854	1,270	43,289	19,982	8,354	6,619	1,173,483
Arkansas	....	....	52,573	224,684	119,370	563	15,364	4,587	4,475	667	422,283
Dist. of Col.	....	689	4,788	19,434	43,897	....	83,414	11,305	1,543	25,167	190,237
Florida	1,137	410,975	54,094	51,502	433,466	7,246	26,455	33,375	6,563	8,619	1,033,432
Georgia	409	149,641	249,306	97,536	249,065	5,047	33,103	13,165	8,643	3,095	809,010
Kentucky	32,861	....	101,408	195,173	148,363	1,720	8,986	11,243	7,103	40,770	547,627
Louisiana	68,496	145,941	66,646	338,823	242,251	5,827	6,235	16,245	6,149	42,978	939,591
Maryland	1,223,318	363,116	611,805	204,927	180,435	....	71,799	15,034	4,597	16,403	2,691,434
Mississippi	180	219,285	62,631	46,212	186,238	1,430	14,270	10,644	6,485	382	547,757
Missouri	155,199	157,691	855,151	498,795	146,283	310	15,150	15,927	7,063	5,994	1,857,563
North Carolina	19,468	97,874	282,988	41,842	307,945	587	31,705	17,061	7,220	678	807,368
Oklahoma	385,819	....	81,734	186,205	220,929	1,840	5,098	9,439	7,859	601	899,524
South Carolina	....	25,233	149,214	39,927	141,543	3,674	23,749	25,394	4,140	140	413,014
Tennessee	128,571	14,760	270,351	262,868	180,525	690	8,517	9,208	7,004	1,628	884,122
Texas	823,528	876,240	350,479	861,637	778,646	9,710	70,166	42,439	17,095	6,197	3,836,137
Virginia	623	991,114	138,540	203,143	522,939	144	140,010	32,997	6,128	2,197	2,037,835
West Virginia	....	86,053	165,944	251,941	2,916	....	8,367	5,308	7,647	254	528,430
South	2,839,609	3,811,437	3,784,749	3,903,842	4,059,665	40,058	605,677	293,353	118,068	162,389	19,618,847
United States	27,432,627	16,892,735	45,246,859	14,694,701	11,076,414	97,059	1,762,623	719,312	375,493	1,094,475	119,392,298

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" include contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.

The South's share of all prime war contracts and allocations made by Federal agencies and foreign purchasing missions totaled $19,618,847,000 for the period through December, 1942. The total for the entire country was $119,392,298,000. Each state's participation, expressed in millions of dollars, is shown in the map below.





$14,000,000 PARTS BUILDING ADDED TO TEXAS PLANE PLANT

PRODUCTION of parts for the B-24 Liberator bombers and the C-87 cargo transport planes already has started in a new $14,000,000 building at Consolidated Vultee Aircraft Corporation's Fort Worth Division in Texas.

The building addition puts under one roof all the operations required to turn sheets of aluminum into long-range aircraft rolling off the industry's longest mechanized assembly line.

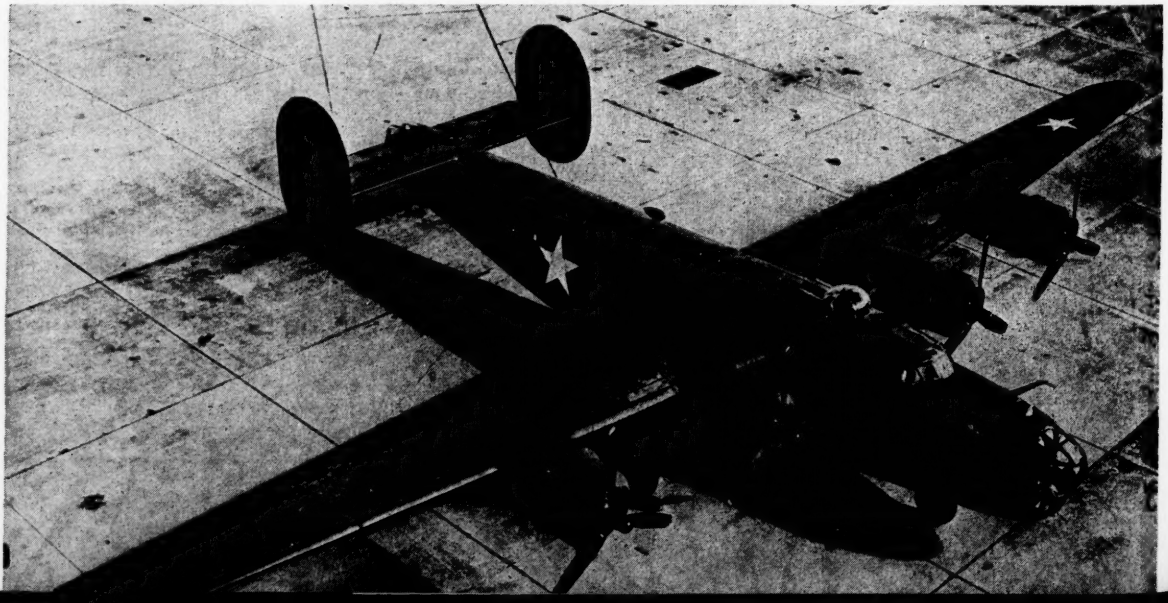
It adds the equivalent of ten city blocks to the plant's assembly building which is still much longer than the new parts building and the new addition gives Consolidated Vultee what is probably the largest aircraft factory in the world.

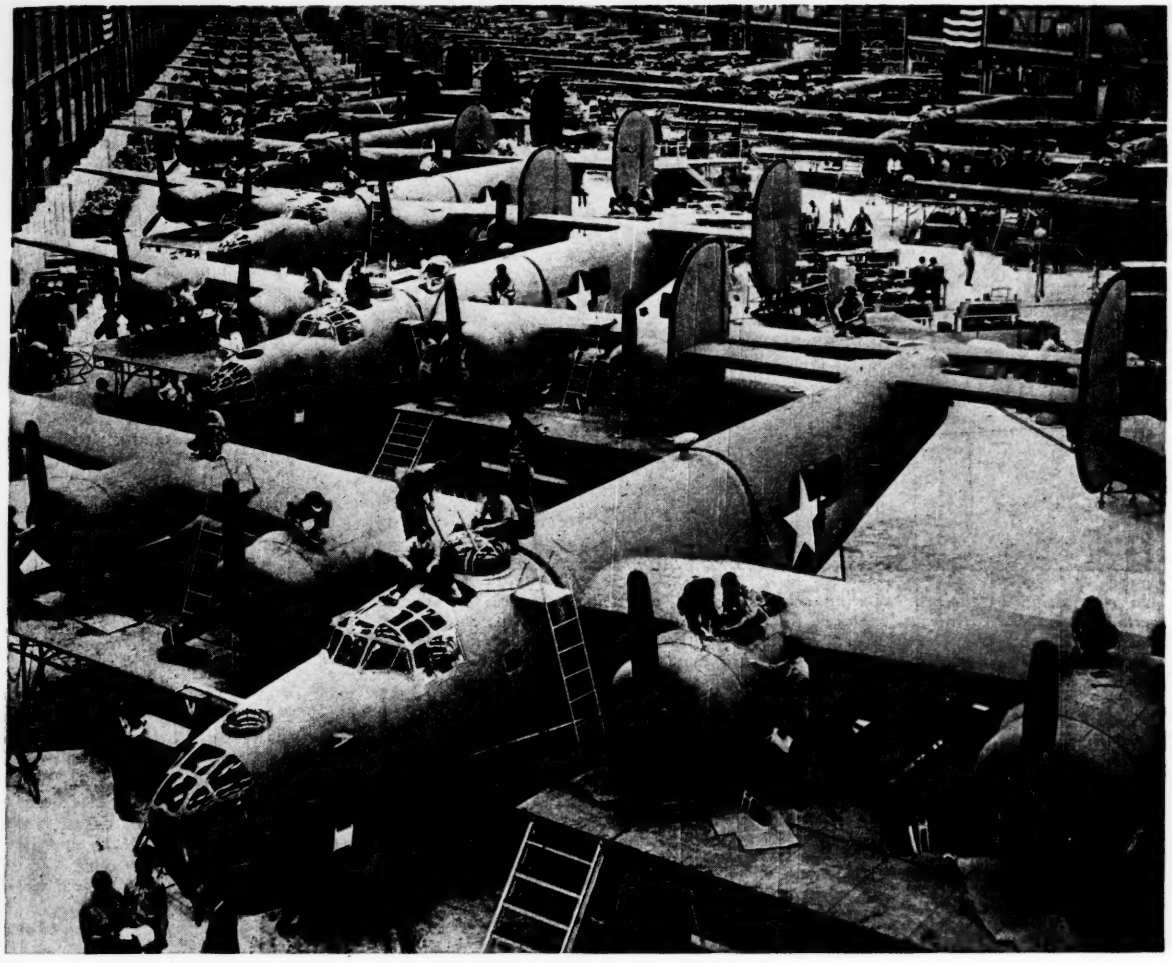
Exact dimensions of the new building are restricted, but it is so huge that three railroad spur lines, providing unloading docks for 24 freight cars, lose themselves in both ends of the building. There are also truck unloading platforms and 14 vertical lift doors ranging up to 70 feet in width through which trains and cranes move.

Its size becomes apparent with the realization that more than 15 fan decks—each as big as a five-room house, are tucked into the ceiling trusses to take care of air-conditioning blowers. Nearly 15 miles of ducts, some big enough for a man to walk through, are required to carry the conditioned air throughout the new building.

Enough fiberglas insulation to stuff the walls of 500,000 average-sized homes went into the windowless building. So did more than seven and a half miles of four-foot long fluorescent lighting tubes. Equivalent of nearly 40 miles of railroad line could be laid with the trackage space covered by its over-

In order to supply an adequate flow of parts to the assembly lines turning out Liberator B-24 bombers like the one shown below and cargo transports like the C-87 shown above, a new $14,000,000 parts building has been added to the Consolidated Vultee Aircraft Corporation's Fort Worth Division plant in Texas. The B-24 is a 28-ton bomber with a bomb load capacity in excess of four tons, has a range of more than 3,000 miles and can fly above 300 miles per hour. The C-87, cargo counterpart of the B-24, has a speed and range similar to the bomber but can carry a cargo load in excess of six tons.





Double assembly line operations at the Fort Worth plant, probably the world's largest aircraft factory, explains in large measure why it was necessary to add a $14,000,000 parts building to keep these lines fully supplied with an endless supply of parts.

head monorail crane system.

Originally the Fort Worth Division was set up to assemble Liberator bombers from parts which were to have been supplied by Ford's Willow Run factory. But when the Fort Worth plant turned out its first plane one hundred days ahead of schedule last April, using parts produced in Consolidated Vultee's San Diego plant, it became evident that production demands would necessitate the Fort Worth Division supplying its own parts.

Hence plans were made for building an adjoining structure, windowless and air-conditioned like the assembly building. The Austin Company, which built the original plant, began pouring concrete for the foundations in the spring of 1942. The erection of the structural steel was completed in September and the roofing and siding was finished two months later.

Parts turned out in the new addition will speed further a Fort Worth production pace that already has established two records.

In addition to parts for the Liberator bomber the new building also will be the source of parts for the bomber's transport counterpart, the C-87. This Texas-built transport, now in full mass production, is said to be capable of carrying the greatest human or freight cargo load of any airplane at present in mass production and can carry these loads at speeds which army men declare exceed anything now available for the purpose.

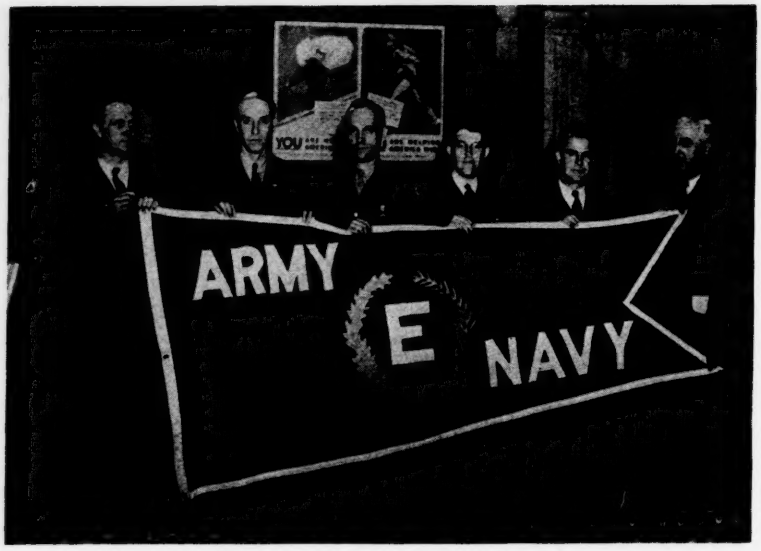
This giant craft, powered by four high-speed engines boosted by turbo-chargers, flies faster than any American bomber except the B-24 and with a range that exceeds any land plane now in production.

The Army revealed that the new transports will carry cargoes in excess of 10 tons, fly faster than 300 miles per hour, and range nearly 4,000 miles.

When the first of the super transports rolled from the assembly line, it was the second record achieved by the Fort Worth plant.

It was exactly a year after ground was first broken that the first four-engined heavy bomber built in the plant made its initial flight, thereby achieving its first production record by being one hundred days ahead of schedule. Since then Consolidated Vultee B-24's have roared off the assembly line in ever increasing numbers.

The Texas plant is the largest in the corporation's connected enterprises. Huge buildings are windowless while the walls are shatterproof and fire resistant to minimize the damage any possible bomb attacks might bring.



In recognition of their outstanding achievement in producing materials for the armed forces, the Glamorgan Pipe and Foundry Company, Lynchburg, Va., was presented with the Army-Navy "E" award last month during ceremonies attended by more than 600 persons. In the scene above, the Hon. C. W. Darden, Jr., Governor of Virginia; A. F. Lloyd, employee representative; Col. J. L. Person, representing Robert P. Patterson, Under Secretary of War; Lieut. W. H. Geppert, representing James Forrestal, Under Secretary of Navy; John D. Capron, president of Glamorgan; and Rep. C. A. Woodrum, master of ceremonies, are shown holding the pennant.

Southern Shipyards Delivered 44 Ships in February

Surpassing all previous ship construction records, American shipyards during February delivered into service 130 new ships totaling approximately 1,239,200 deadweight tons, the Maritime Commission has announced. This brings the total number of vessels constructed thus far in 1943 to 233, totaling 2,247,600 deadweight tons. Moreover, the number of ships delivered during January and February already exceeds the number delivered during the first six months of 1942.

Of the 130 ships delivered, 81 were Liberty ships, 15 C-type cargo, 9 tankers, 23 special types, 1 concrete barge and 1 coastal cargo ship.

The list of southern yards and their deliveries is as follows:

Shipyard	*No. of Vessels*	*Type of Vessel*
Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	8 11	Liberty Special Type
Bethlehem-Sparrows Point Shipyard, Inc. Sparrows Point, Maryland	2	Tankers
Delta Shipbuilding Company, Inc. New Orleans, Louisiana	5	Liberty
Gulf Shipbuilding Corporation Mobile, Alabama	1	C-2 Cargo
Houston Shipbuilding Corporation Houston, Texas	5	Liberty
Ingalls Shipbuilding Corporation Pascagoula, Mississippi	2	C-3 Cargo
North Carolina Shipbuilding Company Wilmington, North Carolina	9	Liberty
Southeastern Shipbuilding Corporation Savannah, Georgia	1	Liberty

First Helium Shipment Made From New Plant in Texas

Marking a tremendous increase in the output of vital helium for the Navy's anti-submarine blimps and other important war uses, the Bureau of Mines recently shipped the first carload of helium from its new and largest helium plant "somewhere in Texas" and announced simultaneously that work is being rushed on four other similar plants to bring the production rate of the lightweight, noninflammable gas for 1943 to about 40 times that of prewar days.

Until the new Texas plant was placed in operation, the Bureau had been supplying helium from its facilities at Amarillo, Tex. The Amarillo plant, built in 1929, has been expanded considerably in the past several months and today is producing at a rate five times greater than at the outbreak of the war.

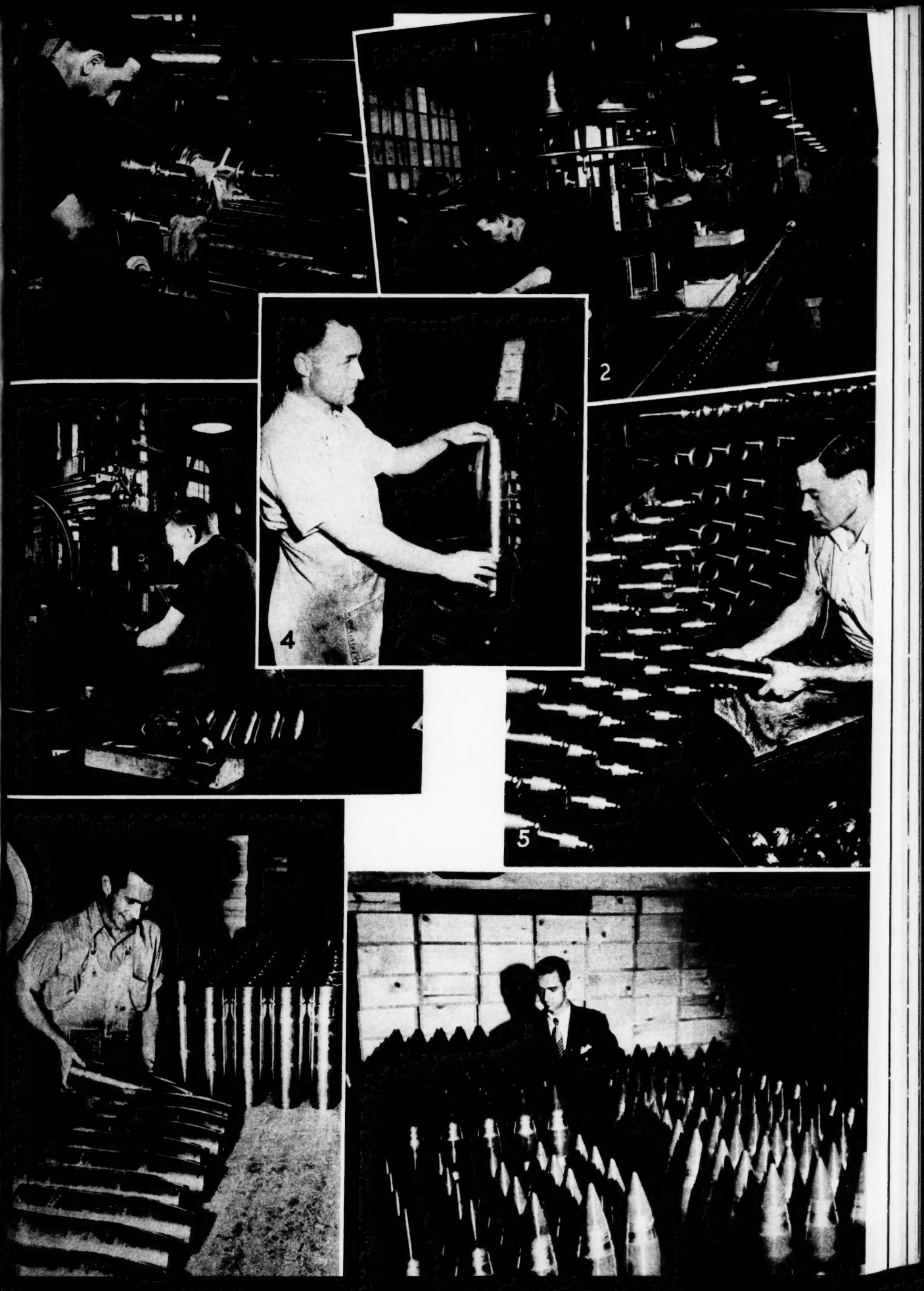
On its initial runs, the new Texas plant is operating at less than capacity so that equipment will be "broken in" properly. Processing units still are being added and when these are installed the plant will reach its rated capacity, which is larger than the Amarillo facilities. Two of the four uncompleted plants each will have an output equal to the Amarillo plant and two will have about half of the capacity.

Because of its noninflammable characteristics, helium is considered the "back-bone" of the Navy's growing fleet of higher-than-air craft which have been highly effective in combatting submarines preying on convoys and other ships. The importance of helium to the Navy was explained recently by a high-ranking officer who said: "Helium, as the lifting force in airships, is analogous to wings for airplanes. Without an adequate supply our airship production will be slowed or halted and our operating airships will be hangar-bound."

Since the United States has a world monopoly on helium production, Axis nations have sought many times to gain supplies of this valuable gas. In 1938, Secretary Ickes, long an advocate of increased helium production, turned down Germany's plea for helium from the Amarillo plant. Because of the rigid control exercised over this gas, none has reached the Axis powers.

SHELL PRODUCTION

In spite of the fact that each one requires precision workmanship to meet almost unbelievable tolerances, shells of all kinds and sizes are pouring from the production lines of arsenals throughout the nation in a never ending stream to keep the thousands of guns well supplied. How large a number are needed may be gauged from the fact that a 75 mm. gun can fire 166 shells per hour. In the pictures on the facing page are shown some of the operations performed in producing these shells. 1. Turning shells parts on a turret lathe. 2. Working both ends of a 75 mm. shell at one time on multiple spindle machines in an eastern Army arsenal. 3. Finish turning of 75 mm. shells. 4. Gauging the accuracy of a 155 mm. shell by an electrolimit gauge which measures all parts and each curve to the 10-thousandth of an inch. 5. 75 mm. shells stand as semi-finished ammunition awaiting loading. 6. Weighing shells during the all-important process of inspection. 7. Completely finished, these shells are now waiting to be packed in wooden cases for a shipment to their destination.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Important New Industrial Plants and Expansions in the South During March

ALABAMA

CHILDERSBURG—E. I. DuPont de Nemours Co., Wilmington, Del. and Childersburg, let contract to Joseph G. Day and Harrison Richardson, 431 S. 24th St., Birmingham, Ala., for 25 staff houses.

ARKANSAS

Additional Facilities—Defense Plant Corp., authorized an increase of its contract with Lion Oil Refining Co., El Dorado, for additional plant facilities costing $325,000 for plant now under construction.

STAMPS—power plant—Arkansas Power & Light Co., C. S. Lynch, executive vice president, Pine Bluff, let contract to Pioneer Construction Co. of Malvern, for clearing right-of-way for a six-inch natural gas pipe line to the company's $3,000,000 steam-operated electric generating station two miles east of Stamps, now under construction, from the McKamie Gas Cleaning Co.'s sweetening plant on the L. and A. railroad south of Stamps; same company will clear the right-of-way for a 110,000 volt transmission line from the generating sub station at Magnolia; this line will transmit power generated at the new plant to the company's inter-connected system; pipe line and transmission line will cost $150,000; other contracts previously awarded are: J. P. McNulty, Pine Bluff, for foundation work; Construction Engineering Co., contract for erecting boiler designed to produce 150 lbs. pressure per square inch; R. H. Bouligny of Charlotte, N. C., electrical work; Foster-Wheeling Co., cooling tower; Blaw-Knox Co., piping, including high pressure steam pipes, boiler feed pipes and water pipes; Turner-McCoy Co. of Little Rock, contract for installing sanitary sewer system, plumbing and drainage; Chicago Bridge & Iron Co. has completed a 50,000 gal. water tank near plant; one of three wells for the plant have been drilled and Layne-Arkansas Co., is preparing to drill 2 additional wells; W. M. Wolford is construction superintendent; A. A. Edewaard, resident engineer.

FLORIDA

JACKSONVILLE — crane — Browning Crane & Shovel Co., 16226 Waterloo Rd., Cleveland, Ohio, has contract at $31,654 for furnishing municipal docks and terminals with a 40-ton Diesel locomotive; Bradley Kennelly, manager of docks.

MIAMI—alteration—Heath & Mann, 2723 N. W. 17th Ave., has contract for refrigeration room alteration, 690 N. W. 13th St., for National Brands, Inc.; cost $10,000.

Additional Equipment — Defense Plant Corp., authorized increase in its contract with Tycoon Tackle, Inc., Miami, to provide additional equipment and machinery at plant in Florida; cost $14,000; overall commitment of $360,000.

GEORGIA

ATLANTA — diesel engine plant — Brice Building Co., 215 S. 18th St., Birmingham, Ala., has contract at $65,000 for Diesel engine plant on Windsor St., S. W. for Southern Railway.

KENTUCKY

Plant Facilities—Defense Plant Corp., subsidiary of RFC, authorized contract with Tube Turns, Inc., Louisville, to provide plant facilities in Kentucky; cost approximately $6,525,000.

Plant Equipment—Defense Plant Corp. authorized an increase in its contract with Tom Moore Distillery Co., Bardstown, to provide for additional equipment at plant in Kentucky, at cost of $55,000; resulting in an overall commitment of $80,000.

Contracts Awarded

Equipment—Defense Plant Corp. authorized increase in contract with Gary Shapiro of Bardstown for equipment of plant; cost $15,000.

LOUISIANA

NEW ORLEANS — locker rooms, etc. — Chris Larsen Co., Maritime Bldg., has contract for locker rooms; Gervais F. Favrot, Balter Bldg., has contract for 2 new pipe shops, and alterations and addition to existing pipe shop, etc., on Florida Ave. for Delta Shipbuilding Co., Inc.; O. O. Carpenter, Plant Facilities Engr.

NEW ORLEANS—plumbing, etc.—American Heating & Plumbing Co., Inc., 829 Baronne St., New Orleans, has contract for plumbing, and electrical work in connection with construction of aircraft plant at Micheaud, near New Orleans, for Higgins Aircraft, Inc.; Albert Kahn Associated Architects and Engineers, Inc., New Center Bldg., Detroit, Mich.

Plant Facilities—Defense Plant Corp., increased its contract with Standard Oil Co. of Louisiana, Baton Rouge, to provide additional facilities for plant in Louisiana; cost $500,000.

Machinery and Equipment—Defense Plant Corp., subsidiary of RFC, authorized contract with Gulf Distilling Corp., Gretna, to provide for machinery and equipment at plant in Louisiana at cost of $125,000.

Equipment—Defense Plant Corp. authorized automotive equipment by Mercury Motor Transport, Inc., New Orleans; cost $20,000; for plant in Louisiana.

MARYLAND

BALTIMORE—alterations—Armiger Construction Co., 2128 Maryland Ave., has contract for alterations to distillery, 400 S. Central Ave. for Defense Plant Corp., Washington; Carrollton Springs Pure Rye Distillery, Inc., lessee; 3-story; brick.

BALTIMORE — building — W. H. Killian Co., 708 S. Eden St., has underway storage building; conc. and cinder block; 1-story; Baltimore Contractors, 15 N. Central Ave., Gen. Contrs.; Pete Alloro, 9 S. Abington Ave., has contract for cinder block work; National Lumber Corp., 1113 Stiles St., for millwork. Cost $15,000.

BALTIMORE — addition — H. J. Dudley, 102 W. Chase St., has contract for manufacturing building and 2 additions, 1301 Wicomico St., for Defense Plant Corp., Revere Copper & Brass Co., lessee; steel, frame and brick; 1-story; 47x46 ft.; cost $30,000.

BALTIMORE—office—Jackson Construction Co., 13 W. 25th St., has contract for office, North Point Rd. for Eastern Rolling Mill Co.; 3-story; brick; cost $60,000.

BALTIMORE—shop—Blythe & Isenhour, P. O. Box 614, Charlotte, N. C., has contract for repair and maintenance shop, service building and remodeling present garage to warehouse space, 2101 Washington Blvd., for Associated Transport, Inc.; Albert J. Carson, Archt.

BALTIMORE—alterations—Asphalt Roofing Co., 2346 E. North Ave., has contract for roofing; Paint Engineering Co., 1428 E. Baltimore St., contract for painting for distillery addition, 400 S. Central Ave., for Defense Plant Corp., Washington, D. C.; Carrollton Springs Pure Rye Distillery, Inc., Lessee; Armiger Construction Co., 2128 Maryland Ave., Gen. Contr.

BALTIMORE — tank house addition — Heinz's Riverside Abattoir, 1900 Light St., erect tank house addition; cost $12,000; owner builds.

BALTIMORE—spray tower—The Glidden Co., let contract to Price Construction Co., Maryland Trust Bldg., for spray tower, dust chamber and precipitator, 6401 St. Helena Ave.

BALTIMORE — addition — Frantz Construction Co., 10 W. Chase St., has contract for addition to building, 1303 Carroll St. for Joseph E. Lewis Co., Inc.; 1-story; masonry; cost $10,000.

BALTIMORE — spheroid — Standard Oil Co. of New Jersey, construct isopentane spheroid, Boston and Haven Sts.; cost $10,000; owner builds.

BALTIMORE—alterations, etc.—Cummins Construction Corp., 803 Cathedral St., has contract for plant alteration: Lloyd E. Mitchell, Inc., 2315 Cecil Ave., has contract for heating offices: Lacchi Construction Co., 337 St. Paul Place, has contract for office alterations, 2122 Broening Highway, for Eastern Aircraft Division of General Motors Corp.

BALTIMORE—chemical plant—Whiting Turner Contracting Co., National Marine Bank Bldg., has contract, according to C. W. Gilchrist, for erection of plant in Curtis Bay section to produce military chemicals; Sulphonics, Inc., owners; recently formed by Standard Wholesale Phosphate and Acid Works, Inc. of Baltimore; Charlotte Chemical Laboratories, Inc., Charlotte, N. C.; Morton Chemical Co., Greensboro, N. C.; George A. Whiting, president of Standard Phosphate, chairman of the board; Joseph R. Morton, president; home offices in Mercantile Trust Building, Baltimore; contracts for equipment let for a plant; in operation, in about 60 days; handle 500,000 lbs. of chemicals daily.

DUNDALK—fire protection system, etc.—Guthrie & D'Adamo, 5014 Reisterstown Rd., has contract for water mains and fire protection system: R. D. Woods Co., 400 Chestnut St., Philadelphia, Pa., has contract for cast iron pipe in connection with water mains and fire protection system for Owens Yacht Co.; Guthrie & D'Adamo, 5014 Reisterstown Rd., Baltimore, Gen. Contr.; R. F. Fisher, Engr.

Plant equipment—Defense Plant Corp., authorized a contract with Carrollton Springs Pure Rye Distillery, Inc., Baltimore, to provide equipment for plant in Maryland, at cost of $200,000.

MISSISSIPPI

VICKSBURG—remodeling—E. W. Pendergraft, Vicksburg, has contract to remodel building, Crawford and Levee Sts. for Magnolia Fertilizer Co. a subsidiary of P. P. Williams; dig deep basement of concrete; water proof; cost $15,000.

MISSOURI

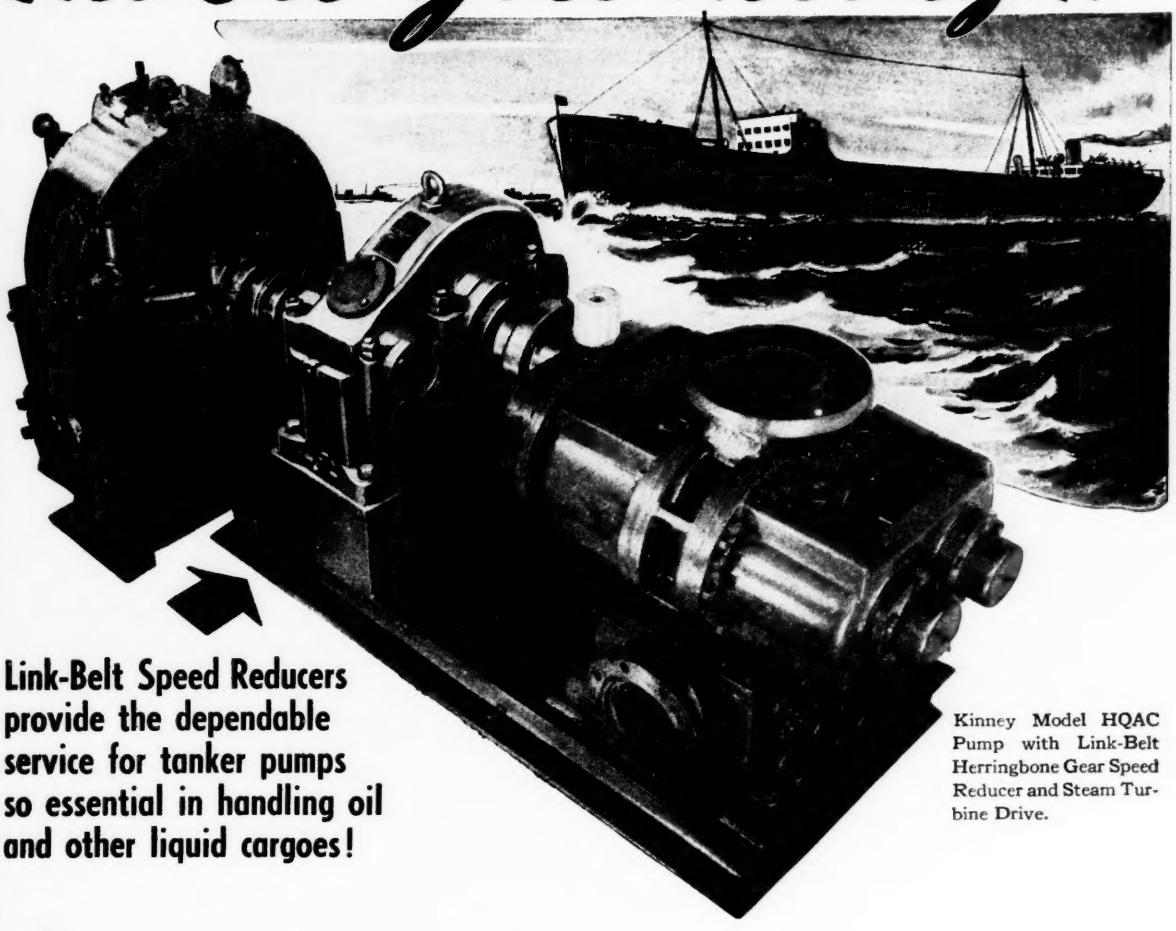
KANSAS CITY—alcohol plant—Sanderson & Porter, 52 William St., New York, engineers and contractors, for grain alcohol plant, for Defense Plant Corp., are making preliminary soundings; the engineering firm and National Distillers Products Corp., operators of the plant, have established offices in the Rialto Bldg., Kansas City; D. S. Pelletier is project supervisor for engineers; resident manager for National Distillers is J. E. Bland.

ST. LOUIS — alterations — Emil Willbrandt, 6970 Cornell St., let contract to E. A. Brunson Construction Co., 4052 Forest Park Blvd., for alterations to factory, 865 Kingsland; cost $15,000; Gray & Pauley, Architects, 3800 Pine St.

ST. LOUIS—alterations—George Moeller Construction Co., 3007 Wyoming St., has contract, work started, on warehouse alterations, 5211 Margaretta for Pevely Dairy Co., Grand & Chouteau, and for shipping room addition, 3646 Chouteau Ave. for same com-

(Continued on page 54)

The Oil Goes Through!



Link-Belt Speed Reducers provide the dependable service for tanker pumps so essential in handling oil and other liquid cargoes!

Kinney Model HQAC Pump with Link-Belt Herringbone Gear Speed Reducer and Steam Turbine Drive.

Tankers and oil-fueled ships, a most important part of our shipping today, depend heavily on their pumping equipment. Important to pumping efficiency are positive drives such as the Link-Belt herringbone reducer, as used on Kinney Manufacturing Co.'s model HQAC pump, shown here, driven by a Whiton turbine. How important this pump builder considers the speed reducer can be told in their own words: "Independent herringbone speed reducers have important advantages, as they offer a wider selection of speeds and horsepowers; are manufactured by specialists in gear design and construction; and since they are independent both reducer and pump are more easily accessible for inspection and repair. In general, sound engineering suggests purchase of speed reducer with pump for compact mounting."

Link-Belt herringbone gear speed reducers with anti-friction bearings, pinions integral with shafts, continuous herringbone gears totally enclosed in rigid housings, are especially suited for heavy duty shock load and where single, double or triple reduction is required in limited space.

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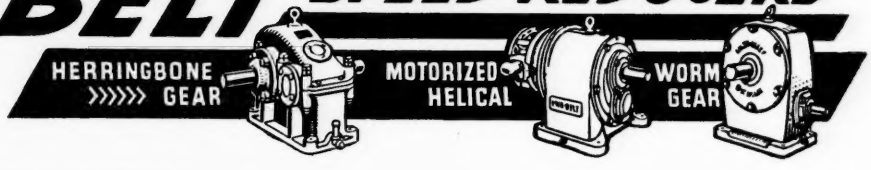


Important New Industrial Plants in the South

(Continued from page 52)

pany; Leonard Haeger, Archt., 3844 Utah Place; cost $17,000.

ST. LOUIS—building—Woermann Construction Co., 3800 West Pine Blvd., has contract for factory building, 4912 Shaw Ave., for Mines Equipment Co., 4215 Clayton Ave.; brick; 1-story; 50x128 ft.; conc. found.; comp. roof.

ST. LOUIS—office building—Diagraph-Bradley Stencil Machine Co., let contract to C. Rallo Contracting Co., 4541 St. Louis St. for $15,000 office building, 3745 Forest Park Blvd.; brick; 1-story and basement; 69x45 ft.; stone found.; comp. roof; steam heat; Gale E. Henderson, Archt. 105 N. Seventh St.

ST. LOUIS—plant—Woermann Construction Co., 3800 West Pine Blvd., has contract, priority rating received, work to start soon, on factory, N. S. Chestnut St. between 18th and 19th Sts., for Century Electric Co., 1806 Pine St.; contract price $99,275; brick, terra cotta, hollow tile, glass blocks, structural glass; 1-story and basement; 108x109 ft.; L. Baylor Pendleton, Archt., William B. Ittner, Inc., Associated Architects, 408 Board of Education Bldg.; Mid-City Plumbing & Engineering Co., 3925 Washington St. has contract for plumbing; General Installation Co., 2234 Olive St., contract for heating and ventilating; E. A. Koeneman Electric Co., 1408 Delmar Blvd., for electric work.

ST. LOUIS—additional equipment—Defense Plant Corp., increased its contract with McDonnell Aircraft Corp., to provide additional equipment for plant in Missouri to cost $150,000.

Equipment—Defense Plant Corp. increased its contract with White-Rodgers Electric Co., St. Louis, to provide additional equipment for plant in Missouri; cost $150,000.

Plant facilities—Defense Plant Corp., authorized increase with Curtiss-Wright Corp., Buffalo, New York, for additional plant facilities in Missouri; cost $825,000.

Expansion—Defense Plant Corp. authorized contract with St. Louis Smelting & Refining Co., 722 Chestnut St., St. Louis, for an estimated $580,000 expansion of its Missouri plant facilities; contemplate construction of mill near Fredericktown and development for mining of lead, copper, etc.; drilling and exploration underway; company leased the Buckeye cobalt mine near Fredericktown.

NORTH CAROLINA

WILMINGTON—plant—Lock Joint Pipe Co., Ampere, New Jersey, will start work soon on temporary plant, to be set up near Wilmington, to manufacture rein. conc. pipe for a 9-mile salt-free water supply line for which Federal funds have been allocated; equipment and machinery will be moved from plant at Huntsville, Ala.; Wilmington water supply line will extend from municipal pumping station at Toomer's Creek to a temporary pumping station to be constructed on Hood's Creek, near Eastbrook; for a distance of 8 miles the pipe line will be laid along the site originally proposed for King's Bluff water supply line; a temporary line will be installed along Hood's Creek for a distance of about one mile to reach deep water; contract for installation of pipe line awarded by FWA to Price Brothers of Dayton, Ohio; laying pipe will start as soon as Lock Joint Pipe Co. starts production; the rein. conc. pipe, 30-in. in diam. will be laid in 16-foot sections.

TENNESSEE

CHATTANOOGA — building — Defense Plant Corp. erect building, 2100 Chestnut St., addition to plant; cost $19,754; J. E. Morelock, Engr.; Mark K. Wilson, Loveman Bldg., Gen. Contr.

NASHVILLE — recapitalization — Tennessee Products Corp., producers of wood alcohol and other products from wood distillation completed plan of recapitalization.

NASHVILLE — alterations — Sumner Construction Co., 151½ 4th Ave., N., has contract for remodeling building for Hugh Smith Co., cost $23,000.

NASHVILLE — additional equipment — Defense Plant Corp., increased allotment to Se-Ling Hosiery Mills, Inc., to provide additional equipment for plant in Tennessee at cost of $20,000, resulting in an overall commitment of approximately $85,000.

Plant equipment—Defense Plant Corp., will allot a $9,925,000 increase to General Motors Corp., to provide additional equipment for three plants, including one in Tennessee.

Additional equipment — Defense Plant Corp. authorized an increase in its contract with Rohm & Haas Co., 222 W. Washington Square, Philadelphia, Pa., to provide for additional equipment for plant in Tennessee, at cost of approximately $50,000.

TEXAS

DALLAS—plant—Universal Corp., 2625 Elm St., T. P. Hale, production manager, has under construction, with day labor, plant on five acre site, at Denton Drive and Maple St.; conc., hollow tile; wood trusses and floor; one building, 100x107 ft., another, 100x437 ft.; Walter W. Ahlschlager, Archt., Southland Life Bldg.

FORT WORTH—plant—Firestone Tire & Rubber Co., Akron, Ohio, acquired Worth Textile Mill; will operate.

SULPHUR SPRINGS—canning plant—Whitson Food Products Co., Denton, has contract to install a $25,000 vegetable canning plant; building will be erected in south part of town.

Expansion—Defense Plant Corp., authorized plant facilities in Texas by Taylor Refining Co., Taylor; cost $1,000,000.

Addition—Defense Plant Corp., increased its contract with Dow Magnesium Co., Midland, Mich., to provide additional plant facilities at plant in Texas, at cost of $335,000; overall commitment of $62,000,000.

Plant facilities—Defense Plant Corp., increased its contract with Southern Acid & Sulphur Co., Rialto Bldg., St. Louis, Mo., for plant facilities in Texas; cost $700,000.

Pipe line—Defense Plant Corp., RFC, subsidiary has agreed to purchase for $2,625,000 the existing 14-in. and 16-in. natural gas transmission line, owned by Houston Gulf Gas Co., extending from Refugio to Pierce Junction; line is about 154 miles long; will connect existing oil pipelines between Corpus Christi and Longview; will be operated to supply a portion of the daily requirements for oil to be carried through the 24-in. pipeline from Longview to Norris City, Ill., and New York-Philadelphia area.

VIRGINIA

NORFOLK—remodeling—J. T. Nichols, 4013 Gosnold Ave., has permit for alterations to building, 108-110 Boush St. for Dominion Tobacco Co.

Contracts Proposed

ARKANSAS

BAUXITE — plant — Aluminum Ore Co., will probably rebuild burned calcining building.

FLORIDA

MIAMI—addition—Heath & Mann, 2723 N. W. 17th Ave., low bidder at $13,596 for addition and repairs to building for Intercontinent Aircraft Corp.; Richard A. Belsham, Engr.; W. L. Remley, Archt.

GEORGIA

ELLIJAY—mill—North Georgia Lumber Co.; capital $200,000; Joseph Gueritz; acquired timber on 2,560 acres in Gilmer County.

KENTUCKY

HENDERSON — expansion — Ohio Valley Soy Bean Co-Operative, G. W. Allen, Mgr., plans erection of additional milling unit; increase capacity from 1,500 bu. to 2,500 bu. daily.

LOUISIANA

NEW ORLEANS—aircraft plant—Albert Kahn Associated Architects and Engineers, Inc., New Center Bldg., Detroit, Mich., received bids March 11 for mechanical contract in connection with the erection of aircraft plant at Michaud near New Orleans for Higgins Aircraft Corp., Inc.; following estimated: American Heating & Plumbing Co., 829 Baronne St. and Emile M. Babst Co., 1050 Camp St., both New Orleans.

NEW ORLEANS — addition — Richard Koch, Archt., 908 Queen & Crescent Bldg., opened bids on addition to plant of Otis Astoria plant at foot of Octavia St.; following submitted estimates: Gervais F. Favrot, Balter Bldg.; Lionel F. Favret, 937 Gravier St.; J. A. Haase, Jr., Inc., 822 Perdido St.; Perrilliat-Rickey Construction Co., S. Rendon and Eve Sts.; J. Gordon Lee, Carondelet Bldg.; R. P. Farnsworth & Co., S. Salcedo St.; George J. Glover Co., Inc., Whitney Bank Bldg.

OPELOUSAS—dehydration plant—United States Department of Agriculture approved construction of sweet potato dehydration plant; Felix Dezauche of Opelousas, general contractor; will enlarge former Dietlein-Jacobs warehouse; install equipment.

SHREVEPORT—pipe line—Arkansas Fuel Oil Co. submitted an application to U. S. Engineer Office, Vicksburg, Miss., for permit to install 2-in. pipeline across Red River about 1 mile north of Shreveport.

MARYLAND

BALTIMORE—ventilation, etc.—Eastern Aircraft Division of General Motors Corp., 2122 Broening Highway, has plans in progress, soon call for bids for ventilation, 3-spray booths.

BALTIMORE — plant — Defense Plant Corp., acquired factory site in Highlandtown area for manufacture of magnesium sand castings.

BALTIMORE — heating — Lloyd E. Mitchell, Inc., 2315 Cecil Ave., low bidder for heating offices for Eastern Aircraft Division of General Motors Corp., 2122 Broening Highway.

CURTIS BAY—mill, etc.—Defense Plant Corp., 811 Vermont Ave., Washington, D. C., has plans by United Engineers & Constructors, Inc., 1401 Arch St., Philadelphia, Pa., for mill and cooker building, struct. steel frame, terra cotta tile, wood floors; roof deck; 5-story; 61 x 51 ft.; 2 airveyor housings, wood frame with corrugated asbestos siding; 1-story; 16 x 15 ft. and 71 x 16 ft.; cost $60,000.

DUNDALK—office—Charles A. Logan, 1030 Hillen St., Baltimore, low bidder for office for Owens Yacht Co., Merritt Ave. & Sollers Point Rd.

MISSISSIPPI

Mining—Col. Jim Walton of Eupora, investigating mineral deposits in Mississippi, with view to establishing plant.

NORTH CAROLINA

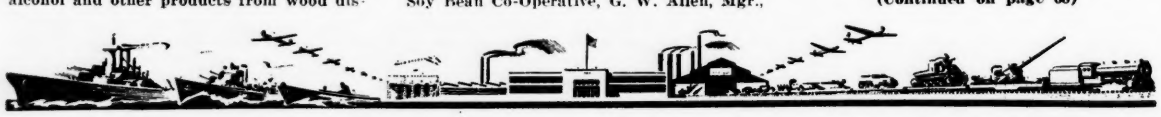
CHARLOTTE — reconstruction — Southeastern Construction Co., 218 W. Second St., low bidder for reconstruction of Darlington Fabrics Corp.'s plant for Defense Plant Corp.; C. M. Graves, Madison & West Sts., Cleveland, Ohio, Archt.

HIGH POINT — plant — Lilly Co., W. I. Longsworth, Pres., Indianapolis, Ind., plans rebuilding burned plant.

WHITEVILLE—dehydration plant—Agricultural Marketing Administration approved construction of dehydration plant to be erected and operated by Broadus Wilson, 2514 White Oak Rd., Raleigh.

WINSTON-SALEM — office — McLean Trucking Co., Waughtown St., near Lexington Ave., has permit for $13,700 office building; main warehouse and garage now under construction at cost of $20,000; office

(Continued on page 68)



A new building of the Bell Telephone Laboratories

Reason for Confidence

More than ninety per cent of American scientists are engaged in beating the Germans and Japanese.

More than ninety per cent of American scientific laboratory facilities are devoted to the same task.

American scientists are working at this job six or seven days a week, long hours, with few interruptions.

They are getting somewhere, too.

Every now and then the Germans and the Japanese have an unpleasant surprise.

They find that American science has caught up with them and passed them.

It is reassuring to us and discouraging to our enemies, for American scientific facilities are the greatest in the world. And they are functioning.

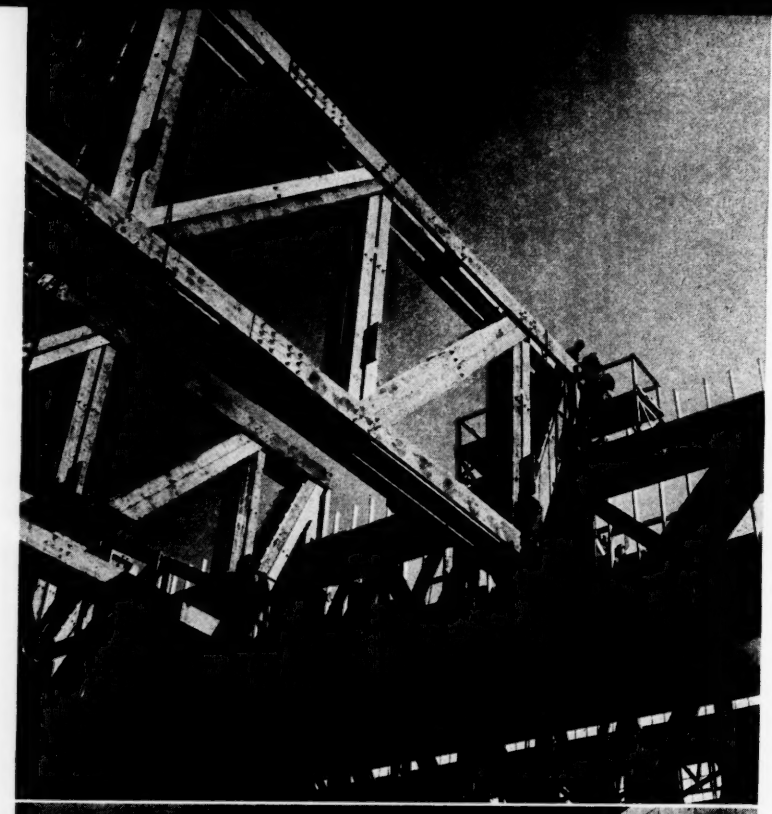
Little by little, some of the things that have been developed become public, but most of them you won't hear about until after the war.

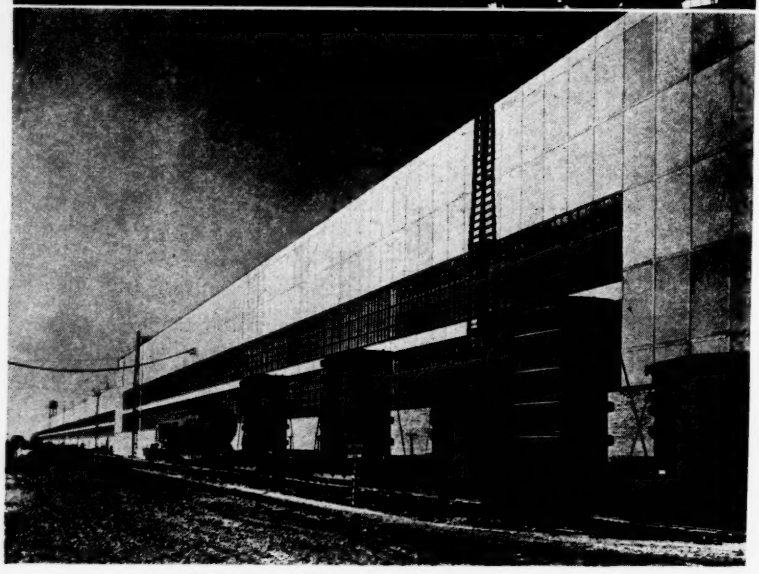
But now, without the details, you can have faith that American research — industrial and academic combined — is rapidly giving our fighting forces an advantage.

Along with other American industry the Bell Telephone System has its own Bell Laboratories — the largest in the world — working overtime for victory.

BELL TELEPHONE SYSTEM

Your continued help in making only vital calls to war-busy centers is a real contribution to the drive for victory





Top—Setting a large truss which is supported by a mammoth jack truss as the framework neared completion in what is described as the world's largest timber factory. The size of the building, in which Army cargo planes are to be produced, can be seen in the lower picture where large transformers arriving at the plant on special underslung flat cars, show clearly against the asbestos cement siding used to enclose the sidewalls.

30,000 Tons of Metal Saved In Building Airplane Plant With Timber

The world's largest timber factory, where giant Army cargo transport planes will soon be produced by Douglas Aircraft Corp. is now nearing completion.

Built by the Austin Company under supervision of the U. S. Army Engineers, this single daylight plant has been stripped of critical materials with a saving of some 30,000 tons of steel, copper and aluminum needed for use in ships, planes, tanks and other war essentials.

Except for the steel pipe and valves in steam lines and the sprinkler system which gives this plant the same high degree of fire protection required in all war plants, hardly any metal larger than a nailhead or bolt can be found anywhere in the vast structure.

It provides all the employee conveniences, comforts and safety features expected in a modern industrial plant, as well as all the advanced tooling, overhead cranes and conveyors, and other facilities needed for efficient straight-line production of big transport planes.

The plant's model fluorescent lighting system, probably the last word in factory illumination, alone saved 132 tons of steel by the use of pressed wood reflectors with a synthetic white enamel surface, instead of porcelain enameled steel, at no loss in lighting efficiency. Copper wiring was reduced one third by the use of a modern distribution system, and a new double-duty lighting mechanism (4-lamp instead of 2-lamp ballasts) in the fluorescent fixtures saved enough copper for 95,000 20mm cartridge casings and enough aluminum for 111,000 fuse primers.

With fiber downspouts; with asbestos and plastic pipe instead of steel to handle water and process lines; with wooden pipe instead of reinforced concrete in the drainage system and wooden manhole covers, as well as non-metallic ventilating ducts and heater and radiator housings, there isn't any metal where one would most expect to find it. The plant has wood sash instead of steel, fabric instead of metal in the flashing that waterproofs the edges of the roofs, and asbestos siding instead of masonry at a great saving in manpower and expense.

The massive wooden structural frame, completed on Washington's birthday, saved approximately 20,000 tons of steel. The auxiliary structures, including boiler house, administration and personnel building, cafeteria, paint shop and hangar, represent an additional saving of several thousand tons. By the use of laminated wood columns, it was possible to get along without large dimension timbers, which would have been practically unobtainable in the short time allowed for completion of this plant.

Two Gulf Shipyards to Get Maritime "M" Awards

Two Gulf Coast shipyards, having attained a status of "meritorious performance" in the production of ships for the Victory Fleet, have been designated to receive the Maritime Commission's popular "M" Pennant, Commission flag, and Labor Merit badges for the workers.

The Ingalls Shipbuilding Corp., Pascagoula, Miss., and the Pennsylvania Shipyards, Inc., Beaumont, Texas, have both achieved an outstanding record in the production of ships, thus making them eligible for the Commission's coveted "M" Award. Actual presentation of the awards to both yards will take place in the near future.

The "M" Pennant is given to shipyards and manufacturing plants engaged in the product of equipment for the ships of the Victory Fleet. Continued excellence in performance is signified on the pennant, when the record of the yard or plant is again examined, by the addition of a gold star.

The Arundel Corporation

BALTIMORE, MD.

Dredging—Construction—Engineering

Distributors of Sand-Gravel-Stone and Commercial Slag

A COMPLETE ORGANIZATION

Our complete organization with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of earth, masonry and concrete dams, drydocks, dredging of all kinds, river and harbor improvements, deepening channels, hydraulic filling and rock work, tunnels, railroad construction, sewers and waterways.

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SAND—GRAVEL—BRICK
FILTER GRAVEL

Washed Sand and Gravel for Concrete Roads and Buildings
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FILLING, LAND RECLAMATION, CANALS, PORT WORKS
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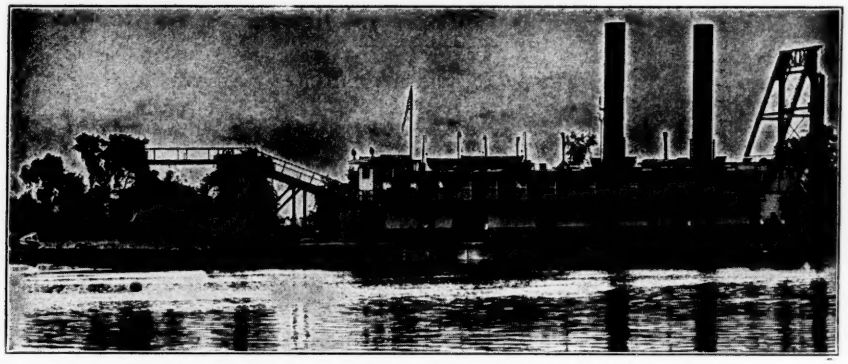


We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

NEW YORK: 15 Park Row HOUSTON, TEXAS: Citizens State Bank Bldg.

New Methods and Equipment

Variable Speed Mechanism and Gear Reducer Combined in Single Unit

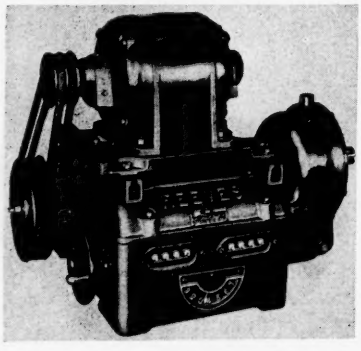
A new unit in the line of variable speed control equipment built by Reeves Pulley Co., Columbus, Ind., is the Reeves Reducer-Type Transmission.

This drive, which consists of the standard Reeves Variable Speed Transmission with built-in Speed Reducer, has been developed to meet requirements for accurate speed control and speed reduction combined in one compact unit. An outstanding advantage of this Reeves drive is that far less mounting space is needed to obtain the lower range of speeds which formerly required the use of auxiliary speed reducing equipment. Available in two enclosed designs—horizontal and vertical, each is available in a wide range of speeds and in capacities from 1 to 7½ horsepower inclusive. The Transmission in various sizes produces ratios of speed variation from 2:1 through 12:1 and the reduction gears provide ratios up to and including 6.9:1. Speed changes are effected by turning a handwheel or, if completely automatic regulation is desired, it is available by mechanical or hydraulic methods.

Asbestos-Cement Board to Replace Metal

To help meet the current urgent need in industrial operations for materials to take the place of sheet metal, various forms of lumber and other items which are either scarce or under necessary wartime restrictions, The Ruberoid Co., 500 Fifth Ave., New York, introduced a specially fabricated asbestos-cement, all-purpose building board.

The new board, called "Stonewall", is claimed to have inherent characteristics which make it easily adaptable to many of the uses to which the "gone-to-war" materials were commonly put. In addition, being made of asbestos fibre and Portland



cement, it is fireproof, rotproof, verminproof and rust-proof, has unusual strength and needs no paint.

The board is made in three thicknesses (3/16", ¼" and ⅜") and is said to be flexible and easy to work—can be readily sawed or scored, drilled and nailed.

Among the recent large-scale uses of Stonewall Board have been the application of millions of square feet as exterior veneer on Government, Army and Navy buildings, and as interior lining and partitions for these and other war-industry structures. Due to its wide adaptability, the new Stonewall Board has, according to the announcement, already become a staple stock item with many building material dealers.

Hard Maple Wheels to Replace Rubber

End-wood wheels made of wedges of selected hard, kiln-dried maple to replace rubber wheels on industrial trucks are announced by The Metzgar Co., Grand Rapids, Mich. These wheels are available with a choice or either Oilless End-Wood

bearing, or roller bearing and are made in sizes from 2½" to 20" in diameter to replace present wheels. This wheel is described as not a mere substitute for rubber,—it lasts longer, rolls easier and is sufficiently quiet and shockabsorbing for most purposes; it is chemically treated and spark-proof.

Plastic Lithographic Plate Replaces Metal

A new plastic lithographic printing plate, which saves from three to eight times its weight in critical aluminum and zinc has been announced by E. I. du Pont de Nemours & Company. Now preempted by the Army and government agencies, these plates are manufactured by The Plastolith Company of Boston from polyvinyl alcohol resin made by the Electrochemicals Department of the du Pont Company.

The plastic is not only the printing surface but also is incorporated in paper used as a base. It gives the paper required strength and stability, and readies it for a waterproof coating of another resin. Two sheets thus prepared are laminated to form the base, and the printing surface is made with a coating of polyvinyl alcohol.

Creation of the printing image is the same as with metal plates. Polyvinyl alcohol is sensitized with bickromate of ammonia. It is exposed to light, treated with the developing ink, developed in water, etched and placed on the press.

New Telescopic Lift Tilting Fork Truck

The new model KM30-2 center control telescopic lift tilting fork truck represents the latest development in Yale Self-Loading Materials Handling Equipment. Measuring 98 inches from 30" fork tip to stern—this truck can navigate narrow aisles, around sharp corners, and in close quarters carrying full capacity loads. With a single fork height lift of 71½

inches and additional telescopic lift reaching to 129 inches, it moves, tiers, stacks, and stores materials ceiling high—thus utilizing every available inch of overhead storage space.

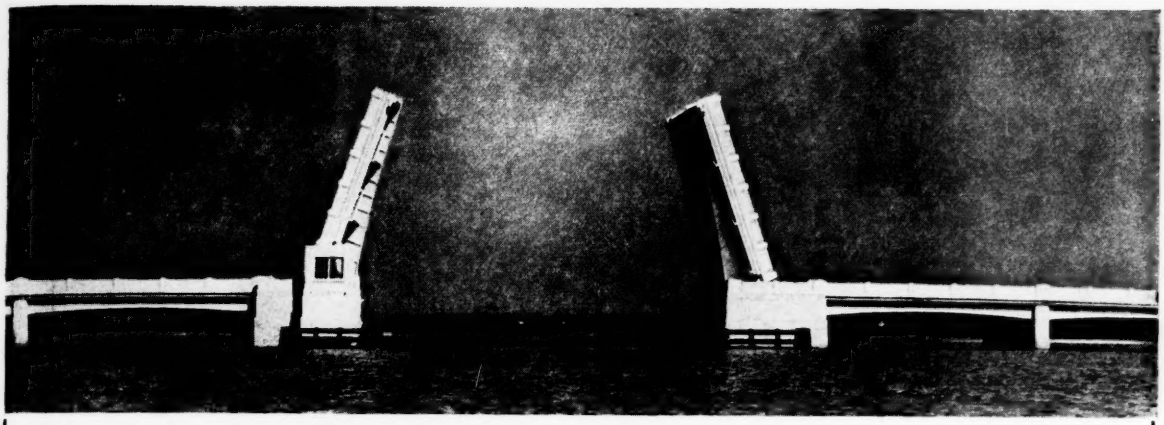
The Tumbl-Spray Metal Washing Machine

A new metal washing machine, designed for removing chips, dirt, grease, and oil from machined parts, stampings, screw machine parts, etc., is announced by American Foundry Equipment Company, 555 S. Byrkit Street, Mishawaka, Ind. By means of its special patended endless tumbling conveyor, this Tumbl-Spray machine achieves complete exposure of work to the cleaning action of the high pressure sprays. Details as to mechanical features, construction and operating details, and specifications are obtainable from a circular on the subject now available at the manufacturer's. Schematic drawings and diagrams are included to illustrate the important features and operating sequences.

Diesel Powered Tractor-Trucks to Haul Tanks

Delivery to the U. S. Army of a train load of special Reo built, ten wheel tractor trucks chassis as part of a large order for tank transportation units on which Reo production lines have been active for several months, is announced by Reo Motors, Inc.

These diesel-powered units are used to transport tanks to points needed on battle fronts, thus saving these important fighting units from traveling long distances under their own power. The tractor truck unit pulls a large flat-bed trailer on which tanks are loaded by means of a power hoisting mechanism.



Electric Arc Welded Double Leaf Bascule Bridge

Central Avenue between St. Petersburg and Treasure Island Beach, Florida

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STRUCTURAL STEEL

For Buildings, Bridges and All Industrial Purposes

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Docks for Ocean Vessels

Atlantic Creosoting Co., Inc.

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Plants at: New Orleans; Winnfield, La.; Louisville, Miss.; Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.

PREVENT ACCIDENTS

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Carey GREASE BALL

NON-SKID!
FIREPROOF!
USED DRY!

Quickly Cleans Grease Caked Floors . . .

No Caustics or Acids . . . Harmless to Hands, Feet, Clothing!

Asbestos Sweeping Compound

At last a sweeping compound that quickly cuts away and removes gummy grease and oil deposits, thereby eliminating fire hazards and the cause of accidents due to slippery floors. Classified as Non-Combustible by Underwriters' Laboratories, Inc. May be used over and over until fully soaked. Prompt shipment in convenient 50-lb. bags. Write for free sample and full information. Address Dept. 61.

THE PHILIP CAREY MFG. COMPANY

Dependable Products Since 1873

LOCKLAND, CINCINNATI, OHIO

New Methods and Equipment

Pressed Fibreboard Lockers

To make a wartime locker compartment, the Sanymetal Products Co., Inc., 1705 Urbana Road, Cleveland, Ohio, selected Pressed Hard Fibreboard, and adapted manufacturing methods and devices to achieve a single objective, namely; to provide a locker compartment capable of giving users a satisfying sense of privacy and protection for personal property. Pressed Hard Fibreboard is so slow to burn that it offers almost as much protection as steel. Rabbeted connections reinforced on the inside by the

use of angle braces, add rigidity and strength to the entire structure. An olive green lacquer finish which dries hard and gives a smooth finish that is easy to keep clean, is sprayed on the surface. Assembly can be completed without skilled craftsmen. A wartime range of types and sizes is available for working out installations for ten or ten thousand employees. The four primary types are; single tier, single front; double tier, single front; single tier, back to back; double tier, back to back.

New Steel Analysis Chart

A new, revised standard steel analysis chart has just been published by American Steel & Wire Co., U. S. Steel subsidiary, to aid wartime steel users. Embracing all modifications and changes in the analyses of AISI, SAE and the NE steels up to February 1, the chart folds up to a small, compact size readily available for easy reference.

A new feature is the breakdown which shows whether or not various types of products are available in specific analyses, together with the listing of the varying amounts of different component elements used in producing the various grades of steel. The chart covers carbon and free cutting steels, manganese, nickel, nickel chromium, and molybdenum steels, in addition to chromium, chromium vanadim, silicon manganese, and National Emergency steels. The chart is obtainable from the Sales Promotion and Advertising Department, Rockefeller Building, Cleveland, Ohio.

New Coolant System for Horizontal Band Saws

The advantages of using coolants in metal cutting operations on horizontal type band saws, are now a possibility through the application of a new coolant system offered by the Gray-Mills Co., of 213 W. Ontario St., Chicago.

The Gray-Mills system, Model S-20, is designed to fit all types of horizontal band saws. It has a Gray-Mills pump of ample capacity mounted in a coolant return pan, which in turn is attached below the saw to the legs. Being larger than the saw itself, all fluid is caught by the pan and returned to the pump for recirculation. The entire system is easily attached or removed; no drilling or alteration of the saw is necessary. Another unusual feature is the oil feed tube which is slotted to fit the saw blade, assuring a full distribution of oil over the blade. A specially blended cutting oil for band saw applications has been developed to assure the highest saw cutting efficiency. Called "Flo-Bac" Saw-Kut No. 5, it has been added to the company's line of "Flo-Bac" Coolants.

Corning Announces New Glass Insulators

A new line of electrical insulation known as Multiform Insulators has been announced by the Corning Glass Works.

This development provides the electrical industry with a new insulation supply at a time when war requirements are straining existing facilities.

General dimensional tolerances are: large or heavy pieces, intricate shapes, hollow cylindrical sections—plus or minus 2.0% or 0.010"; flat plates, solid rods, discs, beads, bushings—plus or minus 1.0% or 0.005", excepting thickness which should be plus or minus 4.0% or 0.005". Also, this glassware can be ground and polished to closer tolerances if necessary. Seals to other appropriate glasses can be made.

In dielectric strength, the new Multiform Insulators have slightly lower values than do conventionally formed products of the same composition. The dielectric strengths— 500 volts per mil or more—are sufficient, however, for all ordinary applications and generally, are much higher than the dielectric strengths of other ceramic products.

Among the advantages claimed for Multiform Insulators are minimum frequency drift, negligible water absorption, and low cost factor. It is pointed out that the use of crystals or other compensating devices in conjunction with Multiform Insulators is often unnecessary, for absence of hot flow and cold flow, maximum dimensional stability, and minimum expansion all combine to provide a minimum of frequency drift.

Plastic Composition Replaces Metal in Mechanical Pencils

The amount of metal necessarily used in mechanical pencils has been reduced from 70 to 4 pounds per thousand pencils by redesign and substitution of a new cellulose nitrate plastic composition developed by the Plastics Department of E. I. du Pont de Nemours & Company, it has been announced.

Large quantities of hard rubber, as well as brass, steel, aluminum and other critical metals, are being replaced in all types of mechanical pencils and fountain pens by this special hard composition of "Pyralin" cellulose nitrate plastic.

Barrel sections, feeds, bushings, plungers, tips, clip screws, and inner caps are being made from the plastic. Other applications are anticipated. These are in addition to the caps and barrels long made from regular "Pyralin."

An Aid in Overcoming Absenteeism

In the belief that failure to rotate shifts on an equitable basis is in part responsible for absenteeism, the George S. May Co., 2600 North Shore Avenue, Chicago, Ill., have devised an instrument called the Shiftograph which offers a systematic procedure for the rotation of shifts.

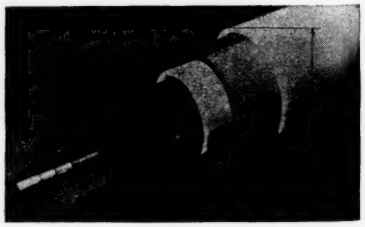
The Shiftograph is a perpetual work shift schedule. By simply turning a dial, the user can tell at a glance what shifts certain crews will work, the days they work and their days off. This instrument provides for several different plans of rotation wherein all employees are treated alike, for they share equally in desirable and undesirable work shifts.

Descriptions of the plans and the instructions for operating the instrument are clearly defined on the back of the instrument itself and it is believed require no further explanation. Any questions that may arise either in the application of the plans or in the use of the instrument will be gladly answered.

More than 150,000 of these instruments are being distributed free of charge by the George S. May Company as its contribution to America's war effort.

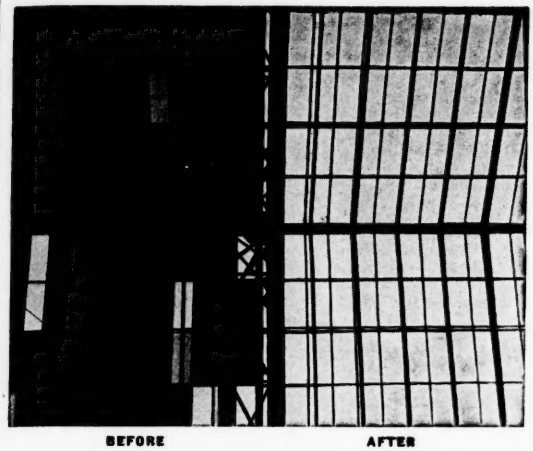
New Sizes of Plastic Tubing Now Available

To meet the expanding demands of war industry, Extruded Plastics, Inc., Norwalk, Connecticut, announce "TU-LOK" seamless plastic tubing is now available in all diameters up to 2" O.D. Within the next few weeks the range



will be increased to 2½" O.D., to meet requirements of War Production.

Extruded from Tennessee Eastman cellulose acetate butyrate, this tubing is available from warehouse stocks throughout the country through Crane Company, Chicago and Julius Blum & Company, Inc., New York City.



BEFORE AFTER

FIRST SQUADRON ARMORY, PHILADELPHIA, PENNA.
8,000 SQ. FT. WHITE CORRUGATED WIRE GLASS SKYLIGHT

SPECIFY ORIGINAL SOLID CORRUGATED WIRE GLASS SKYLIGHTS

PENNSYLVANIA WIRE GLASS CO.
1612 MARKET STREET
PHILADELPHIA, PENNSYLVANIA

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Out of that sheaf of orders that is snowing you under, chances are, you'll find some that you can fill quite easily . . . given moderate amounts of material.

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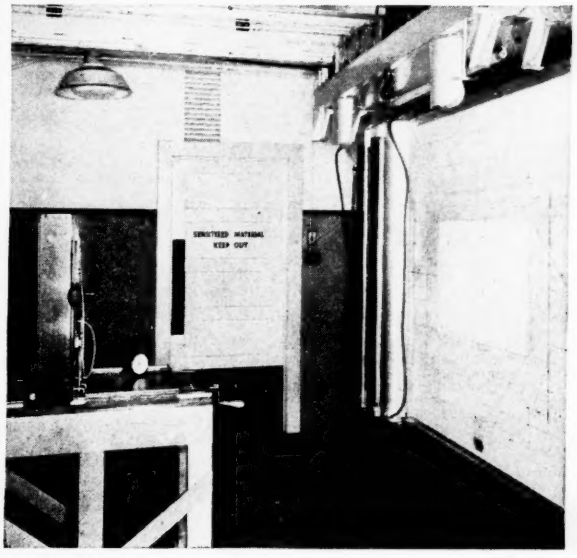

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In many aircraft and other mass-production war plants ARMCO Galvanized PAINTGRIP sheets are used for this exacting job. After a special coat of paint is applied to the bonderized PAINTGRIP sheet, an original full-scale design is drawn by hand. Faster, truer transfers are then made by the new copying methods.

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Could you use bonderized ARMCO Galvanized PAINTGRIP sheets for *your* war-work templates? Write The American Rolling Mill Co., 1141 Curtis St., Middletown, O.

**Write for information and names of patent holders.*

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Industrial News

Goodrich to Open New Office in Atlanta

G. E. Brunner, general manager, National Sales and Service division of The B. F. Goodrich Company has announced that a new office is being opened by the division in Atlanta and Maury M. Calvert named manager. E. E. Bost has joined the Dallas, Texas, staff, in charge of aeronautical and automotive sales in that area. Other appointments include: E. D. Nathan in charge of division sales promotion. He is transferred from the passenger car tire merchandising department. G. C. Zimmerman, in charge of aeronautical sales for the division in Washington is transferred to Dayton, Ohio, in charge of that activity there. F. T. Marshall succeeds Zimmerman in Washington and will continue in charge of the Baltimore office. H. F. Bichsel, Earl Kambrich and W. E. Ireland have been assigned to the Washington office, Bichsel on fabric and inflatable products sales, Kambrich on other aeronautical products, and Ireland on tire, tube and accessory sales.

R. B. Rose Named District Manager for H. K. Porter Co.

Roy B. Rose has been named district manager for H. K. Porter Company, Inc., Pittsburgh, Pa., manufacturer of industrial locomotives and process equipment, for a territory including Eastern Penna., Western New Jersey, Maryland and Delaware. He will be headquartered in Philadelphia, where the Company will open offices in the Girard Trust Bldg., on April 1.

H. K. Porter Company, Inc., reports that its business in this area has more than doubled in the past year. Increased volume of demand for chemical process equipment in particular, and for the Company's new line of wood tank equipment, has required the installation of the new offices for the most efficient servicing of customers in the area. Mr. Rose is an executive of the Company's Process Division.

B. & O. Orders Twenty Locomotives

The Baltimore and Ohio has just placed an order with the Baldwin Locomotive Works for twenty Mallet locomotives. They will have 115,000 lbs. tractive power, the same as other B. & O. Mallets, but will have considerably greater sustained horsepower, obtained through the use of a bigger boiler and firebox. The wheel arrangement will be 2-8-8-4. It was 2-8-8-0 on the preceding type.

The new Mallets will have driving wheels of 64 inch diameter to give them greater speed than has been possible with the older type with their 58 inch drivers. Greater mileage between stops for servicing is also assured by the large tender with its capacity of 25 tons of coal and 22,000 gallons of water. The tenders will be welded and the equipment will include feed water heaters, superheaters, syphons, low water alarms and mechanical lubrication.

Southern Railway Personnel Changes

Changes recently announced in the Operating Department personnel of the Southern Railway System include: E. L. Keister, superintendent at Somerset, Ky., appointed superintendent at Louisville, Ky.; E. M. Tolleson, superintendent at Hattiesburg, Miss., appointed to succeed Mr. Keister as superintendent at Somerset, Ky.; R. F. Logan, superintendent at Richmond, Va., appointed to succeed Mr. Golleson as superintendent at Hattiesburg, Miss.; R. G. Claiborne, superintendent of the Salisbury-Spencer Terminals at Spencer, N. C., appointed to succeed Mr. Logan as superintendent at Richmond, Va.; W. C. Bledsoe, trainmaster at Macon, Ga., appointed superintendent of the Salisbury-Spencer Terminals at Spencer, N. C.

Reliance Electric & Engineering Co., Elects Officers

S. B. Taylor, Works Manager of the Reliance Electric & Engineering Co., Cleveland, since 1931, has been elected manufacturing vice president.

Officers re-elected by the directors were C. L. Collens, president; H. Morley Hitchcock, vice president and treasurer; A. M. MacCutcheon, engineering vice president; James W. Corey, sales vice president; C. V. Putnam, secretary; and H. F. Walters, assistant treasurer.

A native of Kentucky and a graduate in electrical engineering in 1924 from Purdue University, Mr. Taylor joined the engineering department of Reliance and transferred to the manufacturing department of the company in 1930 becoming works manager a year later. He was elected a director of the company in 1935.

Apsey Elected Director of NIAA

Mr. J. F. Apsey, Jr., Advertising Manager, Black and Decker Manufacturing Company has been elected a Director of National Industrial Advertisers Association for the unexpired term of C. M. Buchanan, Van Sant, Dugdale and Company, now in the Army. Mr. Apsey is Vice President of Maryland Industrial Marketers, Baltimore chapter of NIAA in addition to being Director of Exhibitors Advisory Council, and Chairman, Exhibitors Sub-Committee, Association of National Advertisers.

Irving Subway Grating Co., Gets High Priority Order

The importance placed on rail communications by Government officials is reflected in an announcement by the Irving Subway Grating Co., Long Island City, that it is filling a high priority order for running-boards for eight Central Georgia locomotives. The Irving Company, peacetime producer of railroad grating, currently is almost entirely devoted to the manufacture of "pocket airfields" for the U. S. armed forces. The running-boards are of the "safe-car," open-mesh type designed to protect engineers and firemen from cinders. Cinders fall through the steel mesh. With solid steel plate, there is the danger of cinders blowing along it directly to the cab window and into the faces of the occupants.

A. J. Doughty Elected President of Burroughs

Alfred J. Doughty, executive vice-president, has been elected President of the Burroughs Adding Machine Co., succeeding Standish Backus whose resignation has been tendered because of ill health. For twenty years Mr. Doughty had served as vice-president and director of the Company. While superintendent of the Boyer Machine Co., Mr. Doughty moved to Detroit and when that company was merged with Chicago Pneumatic Tool Company he became superintendent of all plants. In 1906, he left to become factory manager of the Burroughs Adding Machine Co., which had moved from St. Louis to Detroit in 1904. He has been uninterruptedly with the Burroughs Company since he became vice-president and a member of the board of directors in 1923.

Mr. Doughty was preceded in the presidency of Burroughs by Mr. Standish Backus who served in that capacity from January 16, 1920, until ill health brought about his resignation. Mr. Backus, too, had a long connection with the Burroughs company, having started his service in a legal capacity in 1912 while he was a member of the law firm of Stevenson, Carpenter, Butzel and Backus. He became vice-president and a director of the Company in 1917 and was elected president, succeeding Mr. Joseph Boyer, in 1920. At the same meeting L. V. Britt, vice-president, was named executive vice-president of the company, and John L. Stewart, treasurer, was elected vice-president and treasurer.

Chicago Bridge & Iron's Pacific Coast Yard Awarded Army-Navy "E"

The Pacific Coast yard of the Chicago Bridge & Iron Company at Eureka, California has received the Army-Navy Production Award for outstanding performance in wartime construction. Commander Harry A. Shawk, Commandant of the Eureka Section Base, represented the U. S. Navy and made formal presentation of the Award. Lieutenant Colonel Donn Austin, Cavalry, represented the Army and presented token pins to employee representatives. Mr. Charles S. Pillsbury, Vice President, accepted the Award on behalf of the company. L. A. Elsener served as chairman during the presentation program. Donald E. Larson is General Manager of the Eureka yard. The Award also included the local employees of the Mercer Fraser Company, sub-contractors on facilities at the yard.

Wheelco Instruments Co., Staff Changes

Three additions to the sales and service staff of Wheelco Instruments Co., Chicago, have been announced by R. A. Scoenfeld, vice president and sales manager. Hugh Acook, formerly in the Tulsa territory, has been named Texas district manager with headquarters in Houston. G. H. Garrison has been named Kansas City representative, with a territory including western counties of Missouri. Russell George has been added to the sales and service department of the company's Combustion Safeguard Division, with headquarters in Chicago.

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Take Off Your Hat to The MYERS

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Plunger Type and Ejecto Type Pumps
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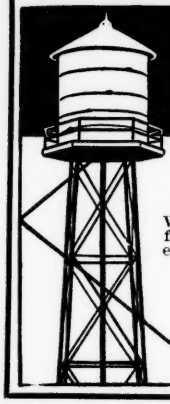

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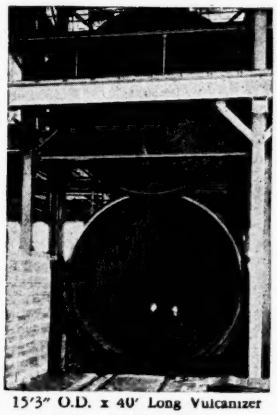

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General Steel Plate Construction designed for your requirements.

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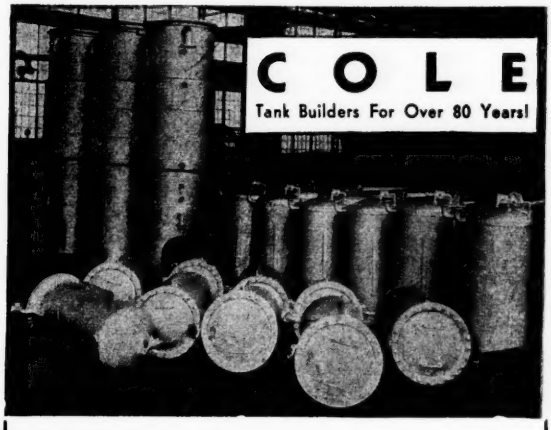

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Meeting all specifications

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Boxley, Greensville County, Va.

W. W. BOXLEY & COMPANY
Boxley Building, ROANOKE, VA.

Nickel-clad or Stainless Vessels

¶ Starch kettles, digestors, vats, and other vessels of this durable metal. Your designs or ours—"custom made" to order.

TANKS, TOWERS, BOILERS, KIERS, KETTLES STANDPIPES, SMOKESTACKS, AIR RECEIVERS, Etc.

Write for "Tank Talk" No. 1-D

R. D. COLE MANUFACTURING CO.
ESTABLISHED 1854
NEWNAN GEORGIA

Trade Literature

MATERIALS HANDLING EQUIPMENT—
Bulletin—#769 illustrated with diagrams and photos, describes a full line of portable stackers and conveyors for storage and warehouse service.
Jeffrey Manufacturing Co., Columbus, Ohio.

CRANES—
Catalog — #213 "Shaw Box Standard Cranes," illustrated with charts and diagrams, describes and gives outline dimensions of cranes ranging from small push type crane bridges to large capacity hand operated cranes and electric operated hoists.
Catalog—#214 illustrated with charts and diagrams, describes multi-motored overhead Electric Travelling Cranes available in four types.
Booklet—"Controlling Crane Hooks" is a handbook for new crane operators giving in simple, concise terms advice as to the operation and parts of a crane together with essential "do's" and "don'ts."
Manning, Maxwell & Moore, Inc., "Shaw-Box" Crane Division, Muskegon, Mich.

CANNING MACHINERY—
Catalog—#700 is a very attractive and substantially bound book containing descriptions and numerous illustrations of up-to-date canning equipment for the production of hermetically sealed products such as fruits, vegetables, seafoods, citrus fruits, meat, etc. In the index there are more than 1000 items. This book is of very practical value today when the matter of canned food products is so essential in maintaining the civil and war needs of the nation. The Robbins Co., is one of the oldest, if not the oldest, establishment of its kind in the country, having been operating since 1855.
A. K. Robbins & Co., Lombard and Concord Sts., Baltimore, Md.

BUSINESS ENGINEERING—
Bulletin—#8 lists available reports dealing with business engineering.
Report—#134 discusses effectiveness of regular and occasional meetings in supervisory training.
Report—#135 relates in detail causes of bottlenecks in industrial shipping and traffic departments.
Report—#136 traces trend to womanpower, potential sources, types of work in which women are effective and other related problems.
George S. May Business Foundation, 111 S. Dearborn St., Chicago, Ill.

AIRCRAFT CHAINS and SPROCKETS—
Booklet—#1825 covers precision built aircraft chains of both roller and silent chain types and supplies dimensions of chains and wheels for both types of chains, tensile strengths, weights per foot, elongation curves, etc.
Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill.

MEASURING INSTRUMENTS—
Folder—describes Scherr Limited Budget Inspection Laboratory including fourteen types of measuring instruments, tools, gages and optical inspection devices.
George Scherr Co., 128 Lafayette Street, New York.

STABILIZED CARRIER—
Folder—Cleveland Crane Graphic, vol. 1 #4 features a new overhead stabilized carrier which overcomes the old hoisting problem of suspending a load rigidly with the use of the usual flexible hoisting ropes. Carrier may be operated on two standard Tramrail rails or on a double girder Tramrail crane bridge.
Cleveland Crane and Engineering Co., Wickliffe, Ohio.

UNIT HEATERS—
Catalog sheet—describes "Grid" Cast Iron Unit Heaters, introduced as a substitute for aluminum heating sections to cooperate with the war effort.
D. J. Murray Mfg. Co., Wausau, Wisc.

SPROCKET WHEELS—
Booklet—#2067 lists sizes of cast tooth sprocket wheels available from stock at company plants, warehouses and authorized distributors. Includes sprockets for Ewart detachable "H" class, SM, SS, XS, GL, "C" class and "800" class chains. List prices, dimensions and weights are given.
Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill.

ELECTRIC DRILLING RIGS—
Booklet—#B-3038, "Electric Drilling Rigs," illustrated with photos, charts and diagrams, discusses advantages of electric drilling, tells where to use d-c variable voltage rigs and where to use a-c. Typical equipment for various drilling depths are listed and their maintenance and care discussed. Also included is a section on auxiliary equipment.
Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.

COLLOID GRAPHITE—
Bulletin—#430-AB illustrated, describes physical and chemical properties of "dag" colloidal graphite and its use as a lubricant for running in engines, for high temperatures, impregnating porous bodies, as a parting compound and for electrical applications.
Acheson Colloids Corp., Port Huron, Mich.

ROOFING, SIDING and VENTILATORS—
Booklet—"Felt-Cote," Roofs and Siding, illustrated, describes composition of this asbestos-protected metal product, its use and application for industrial buildings.
Booklet—Asbo Ventilators, illustrated with charts and diagrams, describes construction, use and capacity of different sizes.
American Steel Band Co., Pittsburgh, Pa.

MATERIALS HANDLING EQUIPMENT—
Catalog—#850, illustrated, is a condensed general catalog of standard equipment giving dimensions, weights, prices and other data on chains, sprockets, silent and roller chain drives, bearings, shafting, couplings, pulleys, buckets, speed reducers, etc.
Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill.

FLOOR COMPOUND—
Leaflet—Alexite Absorbet Floor Compound (Formula 3-43) is described as a four-purpose compound which absorbs grease and oil, is non-skid, smothers fires and is a dustless sweeping mixture.
Alexite Engineering Co., Alexander Building, Colorado Springs, Colo.

79,800 Housing Units Completed in Two-Month Period

Construction of 79,800 housing units for war workers was completed during the first two months of 1943 and building was started on 109,200 additional war housing units. These include both privately financed construction for war workers and projects financed with government funds.

At the end of February, a total of 313,500 new war housing accommodations were in varying stages of construction, and approximately 280,000 more were scheduled for early starting under the current program to meet housing requirements created by in-migration of war labor through July 1 of this year.

Studies are now under way to determine the amount of additional new housing that will be required to accommodate the further migration of labor needed for war production after that date.

Construction of war housing is carried out under local quotas established by the National Housing Agency on the basis of labor migration data supplied for each war community by the War Manpower Commission. In order to save critical materials, no new housing is authorized in localities where it is found that in-migration of war labor is unnecessary or where sufficient accommodations are available in existing structures or through conversions to house the expected essential in-migration.

In developing its local war housing quotas, the NHA schedules privately financed construction if the need is for family accomodations which can be permanently absorbed by the community and if the private builders can meet necessary war-time requirements. To the extent that private financing cannot meet the need because of occupancy conditions or temporary construction, the NHA specifies government financing, and the projects are built by private contractors under government contract.

By the end of February, private builders had completed approximately 192,000 family dwelling units out of the current national quota for private war housing authorized by the War Production Board and the National Housing Agency. Another 73,000 were under construction, and 150,000 were still to be started under the current program. Of the latter, all but a few thousand have already been programmed for specific localities and priorities are available for qualified projects.

Increasing activity in private building of war housing this spring is indicated by the recent uptrend in applications for mortgage insurance on new projects received by the Federal Housing Administration, one of the operating units of the NHA.

OPEN STEEL MESH FLOORING **IRVING GRATING PRODUCTS** VIZABLEDG SAFETY TREADS

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X-BAR — PRESS-LOCKED

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Catalog with Illustrations, Description and Complete Data on Request

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Perfect Shipping—The Packing

(*Continued from page* 39)

ommended that such timber have a moisture content of not greater than 18 percent, though with the scarcity of natural timber this has had to be revised, and the moisture content is even higher these days. When many of these crates arrived in Africa the moisture content was reduced to only 5 per cent, so that both nails and screws could be pulled out by the fingers with the greatest of ease. Another kind of tropical difficulty was encountered in India where a fungus of brilliant hue was discovered on the upholstery of automobile seats left standing for less than 24 hours.

These are but some of the problems manufacturers and the armed forces must guard against in shipping. So serious did this problem become that a special committee known as the Container Coordinating Committee was formulated to embody the experience and best ideas of every branch of the Government involved in shipping for the war. With the assistance of numerous industrial concerns constantly engaged in experiments and analyses, general specifications have been worked out for the packaging and packing of all overseas shipments. Since literally thousands of different items must be shipped, it is impossible here to give any idea as to what these specifications are, for nearly every single product has its own individual specifications.

Speaking generally, however, materials can be segregated into three classes. In the first would be those which can be packed together with little or no protection required, such as buckets, garbage cans, shovels, and even some textile goods. These often need little more than being secured together. In the second group would be those items which necessity demands be shipped in metal containers. This would include a large percentage of subsistence stores, oil, etc. As a general rule these metal containers need little protection, though occasionally they are covered with a coating of grease. Of course many of the subsistence items though packed in metal containers are in

(*Continued on page* 68)

QUALITY COUNTS Now More Than Ever

Quality in valves has always been synonymous with the name "Lunkenheimer" and through the years Lunkenheimer Quality has been the standard by which good valves are judged. Constant improvement and refinement have kept Lunkenheimer abreast of every-changing conditions.

When unprecedented demands arose to produce essential war equipment for the Army, Navy, Maritime Commission and Air Force, Lunkenheimer facilities naturally were called upon to provide necessary valves, boiler mountings, lubricating devices and aircraft fittings. And now, with the entire productive capacity devoted to war work, less important requirements must be deferred.

However, when post-war conditions come, Lunkenheimer will be ready to meet the demands of constantly changing processes for advanced designs of improved quality for every industrial application.

The complete facilities of Lunkenheimer distributors are at your service. They'll go all out to help you get the things you need. Ask for a copy of Catalog 78.

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CINCINNATI, OHIO, U. S. A.
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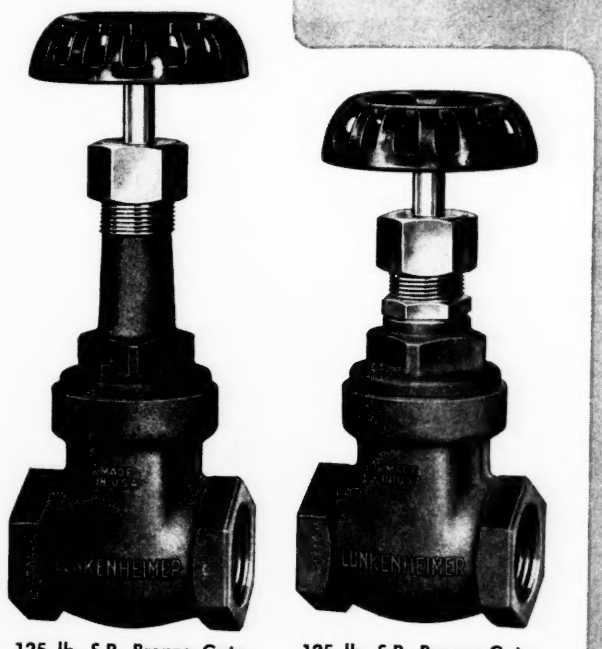

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Double Wedge Disc
Rising Stem

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BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S.P.;
BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

28—107C—62

Pictured here for the first time is one of the Army's latest weapons for land combat. It is a newly designed "tank destroyer," a speedy, maneuverable land cruiser with great firepower. Notice the sloped contour of the hull and turret to deflect enemy shells. This destroyer, known as the M-10, is pictured during a test at the arsenal of the Fisher Body Division of General Motors, where it was designed and now is being produced in large numbers.

S. A. S. I. To Meet In Birmingham

The annual meeting of the Southern Association of Science and Industry is scheduled to be held at the Tutwiler Hotel, Birmingham, Ala., from April 22 to 24.

Highlighting the general meetings on April 23 will be a panel discussion of the future of southern industry under the chairmanship of E. Morrell, managing editor of the MANUFACTURERS RECORD. Among the speakers expected to take part in this discussion are: Langbourne M. Williams, Jr., president, Freeport Sulphur Co.; Emil Ott, Director of Research, Hercules Powder Co.; E. R. Oliver, vice president, Southern Railway System; Hugh Morrow, president, Sloss Sheffield Steel & Iron Co.; C. T. Murchison, president, Cotton Textile Institute; D. F. J. Lynch, director, U. S. Dept. of Agriculture's Southern Regional Research Laboratory; George B. Howell, president, Tampa Shipbuilding Co.; and Gustav Egloff, director of research, Universal Oil Products Co.

Other speakers who are expected to attend and address the various meetings include: Hon. Chauncey Sparks, Governor of Alabama; Hon. Cooper Green, president of Birmingham City Commission; Hon. Homer Adkins, Governor of Arkansas; and John Temple Graves II.

Quick-Frozen Vegetable Production to be Expanded

An expansion program to increase the production of quick-frozen vegetables by nearly 100,000,000 pounds over the 1942 output was announced recently by the Department of Agriculture.

This increase, for which facilities already have been approved, is expected to bring total frozen vegetable production to over 250,000,000 pounds. The increase in output will be primarily for the purpose of meeting expanding requirements of the Armed Forces. Approximately 30 per cent of the production increase, however, will be available to civilian consumers, and will give them a total of about 180,000,000 pounds —about 20 per cent more than in 1942.

The Armed Forces are utilizing frozen vegetables to supplement supplies of the canned products, and thereby conserve tinplate. Because of a lack of refrigerated cargo ships these frozen foods are used principally in the continental United States.

Expansion of 37 quick freeze plants which have been approved, will provide for most of the additional production, with about 25 other plants not in the expansion program expected to increase production with existing facilities.

Peas will lead in production, with a frozen pack in 1943 due to reach about 94,000,000 pounds—30,000,000 more than in 1942. Lima beans also are a major item, with the output expected to increase from 32,000,000 pounds produced in 1942 to about 48,000,000 in 1943.

Other anticipated increases include frozen spinach, from 18,000,000 pounds in 1942 to 28,000,000 in 1943; snap beans, from 14,000,000 pounds to 25,000,000; corn, from 12,000,000 to 25,000,000 pounds; broccoli, from 5,000,000 to 9,000,000; and miscellaneous varieties of frozen vegetables, from 19,000,000 to 35,000,000 pounds.

New "Bombs" Protect Soldiers Against Disease

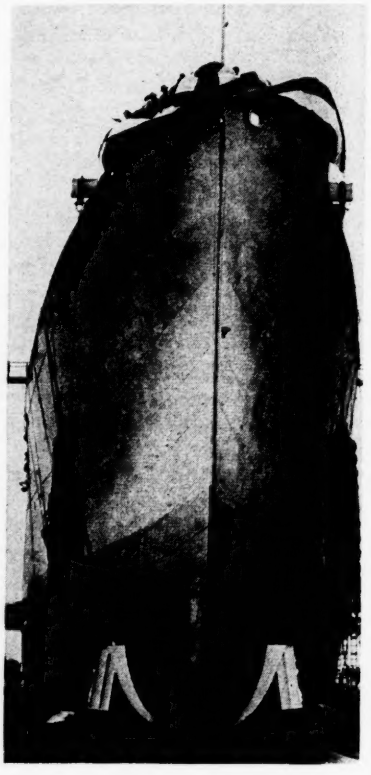
America's fighting men in tropical jungles are now armed against malaria and yellow fever with a new "health bomb" that exterminates disease-carrying insects.

The new weapon is an insecticide dispenser that discharges a mist fatal to disease-spreading flies and mosquitoes, but harmless to humans. The six inch metal dispensers—each about the size of a tin can—are called "bombs" by workmen who make them at the rate of thousands a day in an eastern Westinghouse plant where household refrigerators formerly were produced.

Florida Shipyard Continues Mass Launchings

The U.S.S. Sierra, about to enter the water during recent launching ceremonies at the Tampa Shipbuilding Company's Yards, at Tampa, Florida. This vessel is a sister ship of the U.S.S. Piedmont, which was the largest ship ever launched in the Gulf and said to be the largest ship launched south of Newport News.

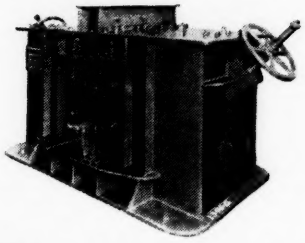
It was on December 7, the anniversary of Pearl Harbor Day, that Tasco launched seven ships, six Minesweeps and the U.S.S. Piedmont. On the same day that the Sierra was launched, four



minesweeps also were launched, going into the water at 30-minute intervals.

George B. Howell, President of the Tampa Shipbuilding Company, in congratulating the workers on their excellent production record, also complimented them on results being obtained in their drive against absenteeism, as the Yard has reduced its absenteeism to less than 6 percent. The workers responded by saying that if the material were made available they would continue to beat their records on getting their ships into the water.

"PENNSYLVANIA" IMPACTORS



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THESE IMPACTORS are cageless and the impact-batting in mid-air crushes against a series of powerful anvils. With no cage to hold it, out goes the feed with no attrition rubbing.

ENGINEERS prefer "cubed" products for roads and concrete. IMPACTOR reductions are distinctly "cubing" with relatively few "spalls" or "flats."

AN EXCLUSIVE advantage is their *reversibility.*

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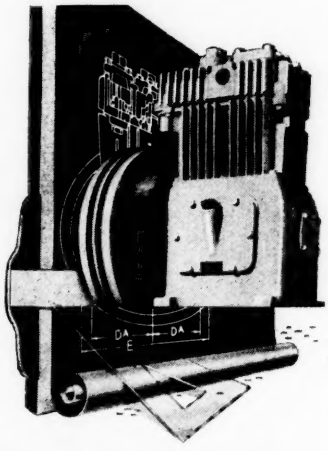

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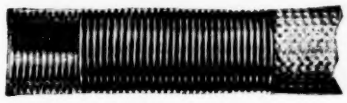
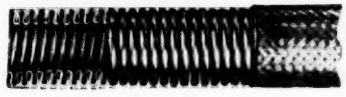
Flexible Metal Hose

Rex-Weld Hose—Annular Corrugations



RW-80 Unbraided ——— RW-81 Braided

Rex-Weld Hose—Helical Corrugations



RW-90 Unbraided ——— RW-91 Braided

—General Data—

	STEEL	BRONZE
Sizes	To 4" I.D.	To 4" I.D.
Pressures	To 14,500 p.s.i.	To 14,500 p.s.i.
Temperatures	To 1000° F.	To 450° F.
Lengths	To 50′	To 50′

—Use Chart—

	*STEEL	BRONZE
Saturated Steam		✓
Superheated Steam	✓	
Sulphur Bearing Oil	✓	
Oxygen		✓
Ammonia	✓	
Carbon Dioxide	✓	
Sulphur Bearing Grease	✓	
Critical Vibration		• ✓
Non-Sparking		✓

**Protective Coatings Can Be Applied for Corrosion Protection (To Conserve Critical Copper Bearing Alloys).*

Couplings: REX-TITE Mechanical (Re-attachable) Couplings; Solder Couplings; Brazed and Welded Couplings and Flange Assemblies for Rex-Weld Flexible Metal Hose.

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Katy's Rehabilitation Program

In the belief that proper handling by a railroad of freight and passengers begins with the condition of the physical plant, Matthew S. Sloan, chairman of the board and president of the Missouri-Kansas-Texas Lines, calls attention to the fact that Perfect Shipping Month this year finds the Katy in the midst of a huge rehabilitation program. The preliminary annual report for 1942, which Mr. Sloan made to the stockholders March 1, mentions that, "anticipating the rising trend of traffic experienced during 1942, a comprehensive plan for the general maintenance and improvement of the property was started during 1941, which has been rapidly advanced and progressed to keep pace with the accelerated traffic density during the past year. The total amount spent during 1942 for maintenance and improvement was $10,992,964, which was a greater sum than in any year since 1929."

Improvements on the Katy last year included renewal of 1,276,380 cross ties, laying of 46 miles of new rail and ballasting of 335 miles of track. This year, in spite of shortages of materials and manpower, the Katy has scheduled stepping up this program, with work under way over most of the entire system.

High school boys employed on Katy rail-laying job.

One of the difficulties of bringing this program to successful conclusion was surmounted when Katy officials hit on the idea of using high school boys on track-laying crews, Mr. Sloan said. The boys work on Saturdays, Sundays and holidays and, through special arrangement with school officials, are excused for work on Fridays when needed, provided they maintain satisfactory scholastic ratings.

"These boys are amazing workers," he commented, "and can outsrip some of our best experienced men in driving spikes and laying rails. They get union pay but don't have to join the union, and they earn their pay—all of them."

The railroad has hired, is hiring and will continue to hire all mature men available for the work, and its president declares that, with the help of school boys, the Katy's rehabilitation program will go forward in order that it may handle its war traffic with a minimum of loss, damage and delay.

Perfect Shipping—The Packing

(*Continued from page 65*)

turn placed in cartons or crates. In such instances, they, together with bottle goods would belong in the third group, which is by far the largest and requires crating of one kind or other. This latter group is without much doubt the most important of all—cans, bottles, miscellaneous goods, precision instruments, metal parts and machines all must be properly braced and in many instances floated or cushioned within the crate.

As stated above, the more delicate items are given protective coatings after cleaning, thoroughly wrapped, and then placed in pliofilm bags. But there are a host of other goods not so vitally important but for which the greatest possible protection must be provided. A method frequently resorted to is that of cleaning, coating, wrapping with cellulose wadding, or some other fibrous material, and then the whole enclosed in a waterproof container, sealed and finally dipped in wax. Even then the crate is lined with a waterproof material. In such instances as this, one of the things that is to be guarded against most carefully is that of condensation, for this can cause tremendous harm, and if the nature or shape of the product involves surrounding air space conducive to condensation, its enclosure is sometimes made into a breather bag so called for its ability to inhale and exhale air without accumulating moisture.

In the case of many large pieces of equipment, full protection against the elements is provided for the top and sides of the crate, while holes are deliberately made in the base to allow drainage of any water which may get inside.

Reference already has been made to the climatic effect upon lumber used in crates. This is a particularly important factor and companies preparing shipments for the Forces would be well advised to follow the recommendations of the Armed Forces as to the most suitable type of wood for the different products to be shipped. The same holds true of the other materials used in packaging, even down to the paper, for the ill effects of paper where an acid content exists have been found to produce serious effects on the materials they cover. Finally, even the construction of the crates themselves, the thickness and strength of the wood, the method of joining pieces, as well as the strapping or wiring may mean the difference between the arrival of a perfect item, or a virtually total loss. A perfect record of previous past performance in exporting is no assurance in these days that such pre-war methods will still be adequate. The factors involved are in no sense the same, and there is little purpose in following earlier packaging methods when the government agency for which the goods are destined has worked out and will willingly provide full specifications as to the complete and satisfactory packaging now required for any given item.

New Plants and Expansions in the South

(*Continued from page 54*)

will be 50 x 100 ft.; 1-story and basement.

WINSTON-SALEM — plant — Palmer-Bee Co., Reynolds Office Bldg., Winston-Salem, and Detroit, Mich., completed arrangements to purchase storage quarters of Winston-Salem Leaf Tobacco & Storage Co. in Waughtown; will be converted into plant for manufacturing machinery; included in deal are 3 buildings; plan erecting a mill construction building on Lomond St.; plans for this building being prepared.

SOUTH CAROLINA

ROCK HILL—addition—Board of Trade interested in $50,000 industrial expansion in an addition to Rock Hill Yarn Mill, Inc.; plans call for an expansion to mill building by subscription of $15,000 by citizens; the mill itself to secure necessary machinery for expansion at cost of $35,000; R. A. Postlethwaite, Pres. of yarn mill; proposed spinning output 60,000 lbs. weekly; Samark-and Rug Co. of Rock Hill is parent firm of Rock Hill Yarn Mill.

TENNESSEE

CHATTANOOGA—gas line—Broxaw, Dixon & McKee, 120 Broadway, New York, are engineers for Tennessee Gas and Transmission Co., in connection with construction of natural gas pipe line from Louisiana to Ashland, Ky.

MEMPHIS—plant—Hunter Fan & Ventilating Co., Inc., Sterick Bldg., acquired building on West Huling St.

SPRINGFIELD — dehydration plant — Kentucky-Tennessee Food Cooperative, subsidiary of Eastern Dark Fired Tobacco Growers Cooperative Assn., Hopkinsville, Ky., acquired building, 21st and Harrison Sts., for dehydrating plant; also establish plant at Hopkinsville.

TEXAS

KILGORE—expansion—Petroleum Administrator for War and the War Production Board advised W. S. Morris, vice president of East Texas Salt Water Disposal Co., that the company has been granted AA3 preference rating for acquisition of approximately $450,000 of added equipment for carrying on program in entire East Texas oil field; company plans to enlarge and increase disposal facilities to a total capacity of approximately 140,400 bbls. daily.

(*Continued on page 70*)

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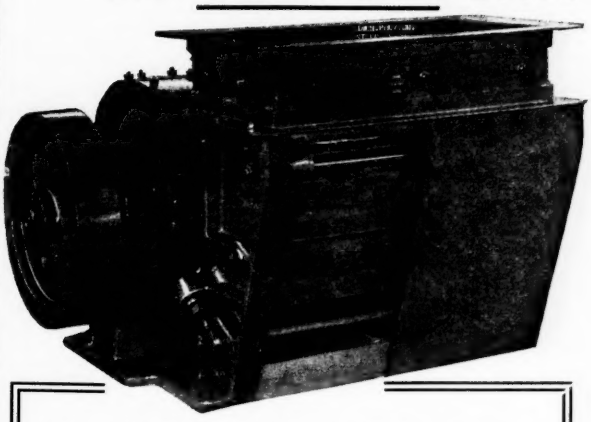

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WRITE TODAY FOR BULLETIN F-100 that shows how easy it is to repair rips, to strengthen soft spots and to put in patches by using Flexco HD rip plates. The bulletin also shows how to make tight butt joints in both conveyor and elevator belts with Flexco HD Belt Fasteners. These fasteners are made in six sizes. Furnished in special analysis steel for general use and in various alloys to meet special conditions.

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Flexco HD Belt Fastener

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FLEXCO HD BELT FASTENERS
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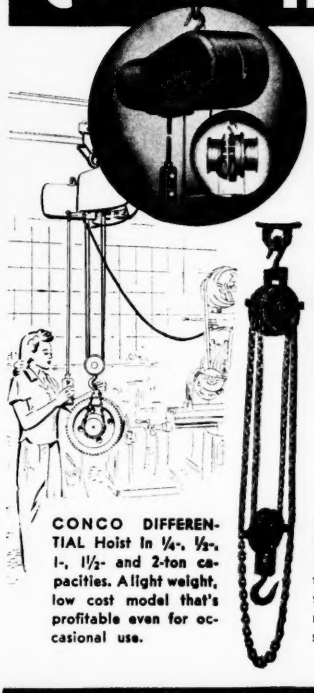

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CONCO SPUR GEAR HOIST. Fast, powerful, in capacities from ¼-ton through 20-tons. A top quality hoist with many outstanding construction features.

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Division of H. D. Conkey & Co.

New Plants and Expansions in the South

(*Continued from page* 68)

MISSION—dehydration plant—Hale County Foods Co., headquarters at Plainview, plans establishing $72,000 vegetable dehydrating plant.

TEXAS CITY — refinery — Defense Plant Corp. receives bids soon, plans being prepared, ready about March 30, for refinery buildings; project consists of laboratory, 66 x 66 ft.; office, 70 x 69 x 59 x 26 ft.; miscellaneous buildings; brick and hollow tile on rein. conc. foundation and floors; Republic Oil Refining Corp., Texas City, operator.

VIRGINIA

BURKEVILLE—cannery—J. S. Clingenpeel, plans establishing cannery.

MARION—furniture plant—Virginia Lincoln Furniture Co., Charles C. Lincoln, Pres., rebuild burned plant.

SOUTH BOSTON — building — Boston Lumber & Builders Corp., Kerry St. will rebuild burned plant; masonry walls, conc. floors; built-up roof; install planer and matcher; band saw; shaper; boring machines; electric motors; blower, etc.

SOUTH

War Emergency Pipe Lines, Inc., has made considerable progress on preconstruction phases of first segment, 836-mile Texas to Indiana leg of the 20-in. Texas to Indiana pipe line; surveys are being made both from Beaumont north and Little Rock south, expected to meet in about 30 days; orders placed for pipe, motors and pumps to cover the first leg of the line; construction contracts are expected to be let in time to permit actual construction by April 1; line is being put down by the Petroleum Administration for War through facilities of War Emergency Pipeline; equipment is obtained through Defense Supplies Corp.; a 16-in. line will be built from Houston, Tex., to Beaumont, 62 miles away to join the 20-in. line.

$14,000,000 Plant Starts Operations in Alabama

(*Continued from page* 40)

troy the program. Therefore, the Material Command decided to do this work in an entirely separate plant, with an entirely different organization between the time that the planes are completed at the factory and then finally delivered to the fighting forces."

Modification centers have been in operation since shortly after Pearl Harbor but until recently the lid has been tight on every aspect of their work. According to the Army Air Forces, "When we make modifications, we want to catch the enemy totally unprepared. If the Japanese had known that we were preparing the types of planes we used against them at Midway, they would have known we were laying for them."

American modification centers were preceded by a similar system tested and developed by the British. In the early part of the war some of the planes shipped from this country were not suitable for operations in the European theatre until the RAF had made necessary modifications.

Outmoded American Pursuit craft, adapted to desert warfare, appeared in Libya and Egypt as highly effective strafing and light bombing planes.

In this country the modification technique underwent a successful test even before the Japanese had completed their conquest of the Philippines. The early Flying Fortresses with which the Japanese had to cope lacked tail guns. Several pilots learned to count on it.

But harried American pilots demanded tail guns, and got them in the B-17 E Fortress. Nearly 100 Zeros were downed before Japanese pilots learned that the old safe blind spot had begun to hammer out death.

The B-17E was a factory modification, requiring some 900 changes. However, modification centers are every day making similar changes, though not on such a large scale. These are incorporated in later production models.

When enough of such changes pile up to warrant inclusion in production planes, preparations are made to alter the design at the factory. Retooling and conversion of manufacturing methods are readied at the factory without interrupting production. In this operation such perfection has been reached that change-over has been made without loss of one working hour on the assembly line.

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WORCESTER • MASSACHUSETTS
NEW YORK
AKRON
LOS ANGELES

Crossroads Democracy

(*Continued from page* 41)

States. The people of this nation want this type of thing stopped until the life of the nation is made secure. The insistence on federal control of elections (of which the poll tax states is but the first phase), the tampering with race relationship through the stupidities of the Fair Employment Practice Committee and the United States Employment Service are illustrative of the lengths to which well-meaning or ill-meaning crackpots will go to advance their own ideologies, even at the price of endangering national security.

(*Continued on page* 72)

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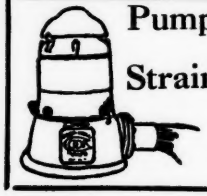

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300 PENN AVENUE, PITTSBURGH, PA.

REPRESENTATIVES IN PRINCIPAL CITIES

Crossroads Democracy

(*Continued from page 70*)

We know that there are about thirty federal agencies now at work planning the future of the United States and of the world. We know, from some of the things which have already come, that a large proportion of them are either crackpots or typical bureaucrats playing with the dangerous weapons of federal control. We know that very few of them will surrender power if they can avoid it. will restore to the people those rights surrendered during wartime. You have seen a so-called emergency endure for ten years until it merged into the actual emergency of war. There are in the Washington of today many people in high places who have been willing to gamble with the very life and death of the nation to foster their pet ideas of economic or social control, who have regarded this bitter, costly struggle as a golden opportunity for themselves and the group they represent.

What to do?

How can we bring about the essential balance? How can we who want to preserve democracy block the federal bureaucrats and the pressure groups which seek to concentrate all power in Washington, where they can remake the map of human rights at their will; how can we prevent that group now planning a regimented future for us from succeeding in their wishes and designs?

By turning back, as far as present-day society will permit us, to crossroads democracy.

One great step can be taken by returning to the former philosophy of government grants, the philosophy and system under which such money as is sent to the people of the states should be spent, not by agents of the federal government, but by and through the state agencies under the general direction of Washington. This is the system formerly followed; it would break the direct connection between the bureaucrat and the people; it would build the local official in power and prestige: it would restore the wavering strength of that local self-government which is the essence of democracy; it would restore the democratic faith; it would help to revive that crossroads democracy which made this nation great.

We are at war. Your sons and mine are in uniform. They may die: they may already have suffered death. They may spend years in prison camps, lingering and desolate. All that we have, all that we cherish, is at stake. The Nation has the right to demand from us a loyalty unquestioning, absolute. It has the right to demand unwavering and cheerful obedience. It will have all these things from us, this I know.

And in return we have the unquestioned right to demand that there be no trickery, no chicanery, no changes in our form of government beyond those essential to the winning of the war. We have the right to demand that the planning at Washington envisage not only the return of the forms and substance of our democracy, but that it be returned to us unsullied, full of that vigor and strength which through the years produced the greatest good for the greatest number of people in any nation.

● In the building program of the rapidly expanding aircraft industry, Dravo Direct Fired Heaters are receiving substantial recognition. It is fitting that so modern a heating method should figure in the growth of this era's most significant industry.

For Dravo Direct Fired Heaters are as modern as flying! Compact and self-contained, they efficiently convert fuel into heat and quickly distribute it in the area where needed. The Dravo Direct Fired Heating system excels the usual steam heating system:—its light weight saves large quantities of scarce metals, its factory construction minimizes the man hours needed for actual installation, its high heat transfer efficiency reduces fuel requirements as much as twenty to twenty-five per cent!

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DRAVO CORPORATION

Heater Department

DRAVO BUILDING PITTSBURGH, PA.

Fifty-five Sales Offices in Principal Cities

Perfect Shipping—Its Benefits

(*Continued from page 32*)

It took a war in 1914-1918 to bring into being the Shippers Advisory Boards and it has taken another war, in which we are now engaged, to demonstrate fully the wisdom and foresight of creating this organization.

When the first Regional Shippers Advisory Board was organized in 1923, chaotic conditions prevailed in many areas. There were serious car shortages and, just prior to that time, loss and damage to freight was costing nearly three per cent of gross freight revenue. Much of this unhappy situation was a legacy inherited from the period of Federal control of the railroads in 1918 through to early 1920.

Since the Shippers Advisory Boards were organized there have been no car shortages of any moment down to the present time and freight loss and damage claim payments have steadily declined until the ratio of loss and damage to gross freight revenue, during the past few years, has ranged around 55/100 of one per cent as compared to 2.36 per cent in 1921. To appreciate what this reduction in loss and damage means from the standpoint of dollars and cents, if the 1921 ratio had prevailed in 1942, the loss and damage account would have amounted to $140,295,922 instead of approximately $33,530,000.

In sponsoring "PERFECT SHIPPING MONTH" for 1943, the Shippers Advisory Boards, with the cooperation of the railroads, have set up one more milestone in their uninterrupted series of progressive actions undertaken since their organization.

Perfect Shipping—The Trucks

(*Continued from page 37*)

full cooperation on the part of both shippers and carriers.

If small quantities of freight are to be shipped to the same, or nearby destinations at frequent intervals, shippers can help both themselves and the carriers by consolidating shipments. Generally, Office of Defense Transportation requirements will not permit the carrier to go out with less than a capacity load and therefore, a single shipment may be required to lay over a day or two before it is moved, or it may be diverted to some other carrier, entailing additional handling and consequently greater possibility of loss or damage. By cooperating with the carrier, offering consolidated loads and so timing them as to fit in with the carrier's scheduled trips, shippers, as well as the transportation system as a whole, will benefit.

Our transportation system is adequate—*if*—it is used in the most efficient manner possible. It is being called upon at present to carry a peak load and simultaneously is confronted with shortages and increased costs which are impairing its capacity. We must all work together toward increased efficiency. Attaining efficiency is not only our patriotic duty but it is a matter of enlightened self-interest. Count on your trucking company for its full cooperation and give it yours.

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THE EARLE GEAR & MACHINE CO.
4719 Stenton Avenue, Philadelphia, Pa.

EARLE GEARS

Perfect Shipping

(*Continued from page 31*)

orders for cars well in advance and by ordering only the number of cars which they know they will actually need. It is of great importance also that shippers see that cars are loaded and unloaded promptly. At a time when our freight equipment has all the work it can do, we cannot afford to use cars as storage warehouses or have them standing idle awaiting loads.

Similarly, it is the duty of carriers, so far as is practically possible under present heavy traffic conditions, to have cars ready for loading at the time for which they are ordered, to dispatch them promptly on completion of loading, and place them promptly for unloading at destination.

Efforts already being made to eliminate delays at all these stages in the process of dispatching and receiving freight must be continued and intensified. A sustained campaign along these lines will speed up traffic movement and enable us to get more service out of available railroad equipment. Since the amount of new equipment that can be obtained during the war is strictly limited, that which we have must be providently used. Everything that can be done to squeeze out wasteful and inefficient use will help by just so much to avert the development, or reduce the severity, of car shortages and thus be an aid to satisfactory performance of the railroads' share of the war transportation job.

Continued cooperation between shippers and carriers, in striving to avoid wasteful use of railroad equipment and in striving to reduce loss and damage to shipments through careful packing and handling of the heavy loads now required, will mean steady progress toward what I have outlined as the wartime goals of Perfect Shipping. I am confident there will be such cooperation and such progress.

Perfect Shipping—By Air

(*Continued from page 33*)

dramatic and sometimes critical situations probably will never be known and cannot yet be talked about, but many are the instances where precious time was saved and possibly an infinite number of lives.

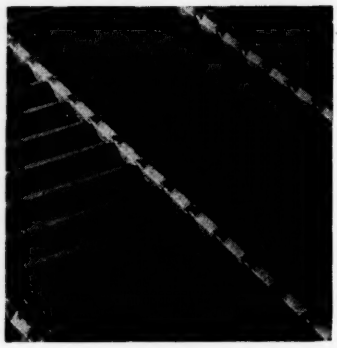
Handling such a volume and variety of products under these circumstances naturally entailed many problems. Among the most important of these was to find the necessary cargo space and the question of packaging. As with no other form of transportation probably, was there such necessity to ensure the safe arrival of freight. Additional handling and transfer because of restricted cargo space as well as the movement of priority traffic accentuated the problem.

Under normal conditions, fairly light containers such as cartons and cardboard boxes, usually are of sufficient strength to withstand the necessary handling and still arrive at the destination in good condition.

But under existing conditions the situation calls for the fullest cooperation of shippers and the closest possible attention to adequate packaging. They should make certain that their shipments are securely packed and that the containers are of sufficient strength to withstand handling. Yet at the same time it must be remembered that extra heavy packing is not desirable. Such packing will use valuable and much-needed weight space in aircraft. Packing of sufficient strength, however, supplemented by wire strapping or tied with stout cord when using cartons and cardboard containers, is a wartime necessity.

Shippers are urged to use greater care in packing to prevent damage to contents. Also, the possibility of detrimental effects to products due to rapidly changing temperatures should be carefully borne in mind. Bottles and tins containing liquids should always be sealed so as to prevent corks coming out, which sometimes happens when a plane is obliged to travel at a high altitude. Extra care by the shipper in packing, especially the use of containers of sufficient strength, will prevent shipments arriving in a damaged condition and consequent complaint from the consignee.

When in doubt as to the size of a shipment or its packing, for movement by air express, shippers are advised to communicate with their local express or airline office. Often air express which cannot be



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accommodated when packed in a single container or box can be more readily accommodated if repacked into two or more units. This suggestion is especially applicable to shipments intended for export by air express. Two more wartime suggestions are advocated by the Air Express Division.

First, shippers who may be eligible for air transportation priority for their urgent shipments should apply for such priority to their regional priority office. The local express or airline office will be glad to assist in this matter.

Second, shippers are advised to "ship when ready" instead of piling up air express traffic for night pick-up. In this way traffic can be forwarded on lightly-loaded daytime schedules and avoid the more heavily-loaded night departures.

Shipments handled in combination rail-air service were an important part of the air transport picture during 1942. Directly linked to air express facilities at 350 airport cities are the 23,000 off-airline offices served by Railway Express Agency, which handles air express pick-up and delivery for the domestic airlines, in addition to acting as agent for international air express. Shipments which moved in combined rail-air express service increased 24.3 per cent over 1941. About 30 per cent of all air express originates at or is destined to an off-airline point or moves part way by rail.

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1—1500 H. P. General Electric Induction Motor, No. 5393731. Type MT-28-1500-257, Form AE, 60-cycle, 3-phase, 6600 Volts. With Starting Equipment.

1—700 H. P. General Electric Induction Motor. No. 5283059, Type MP-10-700-720. Form RE, 6600-volts, 56.5 amps., 60-cycle, 3-phase, 820 secondary volts, 370 secondary amps., 710 R.P.M., 700 H.P., continuous 40 degree centigrade rise.

Oil circuit breaker, General Electric, Type FK-144A, for 700 H.P., Type MT-10-700 General Electric Motor, 15,000 volts, 600 amps., at 60 cycles, 700-amps., at 25 cycles, Catalogue No. 6052541G1, R-P3406, Part Bulletin GEG-1179, Instructions GE1-7038 with:

Time delay undervoltage device, General Electric, Type MG-2, 115 volts, 60 cycles, Catalogue No. 6128085G2, R-P3404.

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1—CAPSTAN, ELECTRIC-DRIVEN, REVERSIBLE, SILENT HOIST CO., barrel diameter 10", 12,000-lb. line pull with rope speed of 30 feet per minute, with the following.

Motor, electric, Electro-Dynamic, Induction, Type BA/-L-SO-10A-3554, Frame 160, 20 H.P., 1150 R.P.M., 220 V., 60 C., 3 Phase, 63 Amps. per terminal, 175 V. secondary, 55 Amps. secondary, for ½ hour intermittent duty.

Manual controller, drum type, Cutler Hammer, No. A7453-71A2, 20 H.P., 3 Ph., 60 Cy., 220 V. primary, 175 V. secondary 54.6 Amps. primary 55 Amps. secondary, for intermittent duty.

Resistor, Cutler Hammer, intermitt. duty.

Overload panel, Cutler Hammer, 220 V., 60 Cy. 54.6 Amps., 20 H.P.

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11—HYDRAULIC, CENTRIFUGAL, 33" intake and 28" discharge, complete with impeller, front and back doors; with Thrust Bearing and Shafts.

4—PUMPS, NATIONAL TRANSIT, No. 49075, HORIZONTAL DUPLEX PISTON PUMP, capacity 120 G.M.P. at 415 foot head, size 4½"x10", with the following motor and acces:

Motor, electric, General Electric, Induction, Model 5K-364BA1F, Type K, Frame 364, 220/440 V., 50/25 Amps., 60 Cy., 3 Phase, 20 H.P., 1755 R.P.M., continuous 40 degree centigrade rise. With Starting Equipment.

2—PUMPS, NATIONAL TRANSIT, No. 49073, HORIZONTAL DUPLEX PISTON PUMP, size 5½"x10", capacity 180 G.P.M. at 180 foot head with:

General Electric, Induction Motor, Model 5K-F326-B898, Type KF, Frame 326, 220/440 V., 38.4/19.2 Amps., 3 Phase, 60 Cy., 15 H.P., 1740 R.P.M., continuous 40 degree centigrade rise, service factor 1.15 at rated volts and cycles. With Starting Equipment.

2—PUMPS, VERTICAL CENTRIFUGAL, YOEMAN BROS., 4"x4", 50" overall height of pump, single-stage, 400 G.P.M. at 250 foot head, with:

Motor, electric, Howell, self-starting Induction, Type N, Frame 40-4, 3 Phase, 60 Cy., 220 V., 99 Amps. full load, within NEIA recommendations, 40 H.P., 3500 R.P.M., continuous 40 degree centigrade rise. With Starting Equipment.

2—PUMPS, HORIZONTAL CENTRIFUGAL, DAYTON DOWD, No. 34275, size 2TU10, 200 G.P.M. at 520 foot head, with the following motor and accessories:

Motor, electric, Century, Induction, splash-proof squirrel cage, Type SCN, Frame 405S, Model SS1-1, 3 Phase, 60 Cy., 220/440 V., 118/59 Amps., 50 H.P., 3470 R.P.M., continuous 50 degree centigrade rise. With Starting Equipment.

CRANES

8—TRAVELING CRANES, CURTIS MFG. CO., minimum span 11'9½", wheel base 6'-6", capacity 20,000 lbs., with: Trolley hoist, Wright Model BB, hand chain operated, 20,000 lb. capacity.

DREDGE LADDER and "A" FRAME

1—DREDGE LADDER "A" frame, consis. of several pieces of structural steel, braces, eye bolts, turnbuckles, rods, etc.

1—DREDGE LADDER, 75' long, weighing approximately 100 tons, with shaft, bearings and with:

2—Trunions.

1—Cutter head.

2—Swing Sheaves.

2—Safety slings, wire rope.

1—Set of rubbing frame and strakes, consisting of:

1—Rubbing Frame.

2—Strakes (Wood beams with steel rubbing plates).

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15—25-KVA TRANSFORMERS, DISTRIBUTION, G. E., Type H, Form KR, Addative polarity, single-phase, 60 cycle, 5940/6600/11430Y to 230 volts, continuous 55 degree centigrade rise, diagram No. 3978194, approximately 3.6% impedence at 6600 volts and 75 degrees centigrade, capacity 31 gallons of 10-C transil oil. Instructions GEJ-56.

6—15-KVA TRANSFORMERS, DISTRIBUTION, G. E., Type H, Form KR, Addative polarity, single-phase, 60 cycle, 5940/6600/11430Y, to 115 Volts, Cap. 16 Gal., 10-C transil oil.

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1—COMPRESSOR, Air Curtis M'f'g. Co., No. 5045-2792, sizes 3⅜"x3½", minimum compression speed 400 R.P.M. with: Motor, electric, Wagner Electric Corporation, Type RP-1, Frame 224, Model Y30B111K416, 1½ H.P., 1750 R.P.M., 220/440 volts, 3 phase, 60 cycle, 4.4/2.2 amps., Model G-348.

Receiver, air, 20"x48", 200-lb. pressure type B.M. 63 gallon capacity.

CAR BOLSTERS

4—Body Bolsters.

DECK FITTINGS

12—Deck fittings, Bollards, double 10", heavy cast steel.

8—Deck fittings, Double roller chocks, 8", roller groove 22" diameter, heavy cast steel.

29—Deck Fittings, Kevels, 36" cast steel.—1 only 48".

Note:—The above deck fittings were manufactured by "Sterling Steel Castings Co., East St. Louis. Ill." St. Louis, Ill.

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2—500-Ton and 4—250-Ton Hydraulic Jacks and 6—6 ft. lift Railroad Bridge Jacking Bents arranged for lift from bridge end pins and clear of train.

#3 Vulcan Hammer.

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Pile Leads and Lead Irons.

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Miscellaneous Structural Steel Shapes and Beams all under 13 ft. long.

8—only 8½" dia. x 9" long Bridge Pins with Bronze Bushings and Recess Nuts.

1—250-300 Amp. old model Portable Lincoln Welder, gas engine driven, now in operation.

20—15 ton "Joyce" self-contained Hydraulic Jacks, foot lift.

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Electric Hydraulic Shovel, 250 Volts DC.

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Bulk Material Unloading Tower—Capacity 350 tons per hour—Tower (wood) 125' high—55' steel boom with trolley—two 2 ton clam shell grabs.

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Steel House 7'x8'x7' high.
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Cincinnati Knee type Mfg. Millers, 18" travel, tab. 12"x34".
#3½ FOX Plain Miller, belt drive, table 6½"x37"

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1—Elwell Parker TOW TRACTOR—7' long, 42" wide, 42" high, 4—16" wheels—to coupling 13" from ground—Ball bearing 4 wheel steer—4 wheel drive—2000 lb. max. DBP complete with batteries.
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ENGINE GENERATOR SET
225 kw. Elec. Mchy. 2200 or 220 v. 2 ph. (can reconnect 3 ph.) 60 cy. dir. con. Ideal Steam Engine.

100 HP. LIDGERWOOD HOIST
Double drum Speedwell 2500 lb. pull at 450' per min. dir. driven by 100 HP. A.C. or D.C. Motor.

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217 KVA. G.E., 3/60/2300, 200 rpm., dir. con. to 260 HP Buckeye, horiz. 2 cylinder, semi-diesel 19" x 23", complete with switchboard, compressor, tanks.

A. C. MOTORS—3 ph. 60 cy.

QU.	HP	MAKE	TYPE	VOLTS	SPEED
1	800	Westg.	Syn.	2200	450
2	250	G.E.	I-K	550	720
1	225	G.E.	TRE-syn.	2200	200
2	200	G.E.	I-K	220/550	600
1	200	G.E.	I-K	220/550	514
2	200	G.E.	I-K	550	720
1	200	Westg.	CS	2200	870
1	200	G.E.	KT	220/440	1200
1	200	G.E.	KT	2200	1800
1	150	G.E.	I-K	220/550	450
2	150	G.E.	I-K	550	514
1	150	G.E.	I-K	550	575
2	150	G.E.	I-K	440	600
4	150	Lou. Al.	FX	220/440	1750
1	150	Al. Ch.		2200	1800
1	125	G.E.	I-K	220/550	400
1	125	G.E.	I-K	440	514
1	125	G.E.	I-K	440	450
1	100	G.E.	I-K	220	575
1	100	G.E.	I-K-14	220/440	720
1	100	U.S.	SC	220/440	1160
2	100	G.E.		220/440	1770
2	75	G.E.		550	720
2	75	G.E.	I-K	220/440	900
3	75	G.E.		220/440	1200
1	75	Westg.	CS	220/440	1160
2	75	Lou. Al.	OX-505	220/440	1770
1	60	Triumph		220/440	430
1	60	Cr. Wh.		220/440	670
2	60	G.E.	I	220/440	720
1	60	Al. Ch.	AN	220/440	1160

25 CYCLE MOTORS—220/440 V.

QU.	HP	MAKE	TYPE	RPM
1	75	G.E.	I-4	900
1	75	G.E.	KT-357	900
1	75	Al. Ch.	AN	900
3	50	G.E.	KT-547	900
3	40	G.E.	KT-347	900
6	40	Al. Ch.	AN	900
1	35	Western Elec.	SL13B	500
1	35	Westg.	M	900
1	30	Westg.	C	720
1	30	G.E.	KT	900
7	30	Al. Ch.	AN	900
2	25	Westg.	MS	715
9	10	Al. Ch.	AN	900

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Large Diesel engines for sale. 2,000 HP units with AC generators, opportunity fill large power requirements.

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1—Snow 6 mgd. C&FW Cr. Com. Opp. Type Cond. 20—40x14⅜x36, with waterwks. type cond.
1—Allis-Chal. 4 mgd. cr. com. cond. Size 12x18x 13x24. Fine cond.
1—Worth. Dup. size 16x12x12, cap. 1100 gpm. heavy waterwks. type.

PUMP VALVES
"Birch Valves" for reciprocating pumps.

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1—20" Rensselaer #13 Iron Body Bronze mounted Hub Eng Gate Valve with 16" Iron Brass Lined Hydl. Cyl. with Indicating Rod and Eyebolt. 100# max. press. on gates, 50# min. Cyl. Operating press.
1—20" Crane 125# Flanged Hand Wheel operating Gate Valve.

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1—10 AD 4 pass 210 ft. Foster Wheeler over Comb. Air Circulating and Tail Pump.

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Elec.: 676, 1300, 1578, 2200 & 2850 Ft.
Bltd.: 368, 540, 676, 870 & 1300 Ft.
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BOILERS: Economic—60, 100 & 125 H.P.
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LOCOMOTIVES: Gas and Diesel—4, 6, 8, & 14 ton, 20 ton, 30 ton, & 55 ton.
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CRANES: Locomotive: 15, 20, 25 & 35 ton
HOISTS: Steam—6x8, 7x10, 8¼x10 & 9x12
Electric: 35, 60, 100, 125, & 400 H.P.
Gasoline: 15, 35, 60, 80 & 110 H.P.
MIXERS: Concrete: 10S, 14S, 21S & 28S
DERRICKS: GUY: 5 ton, 7½ ton, 15 ton
Stiff Leg: 8, 10, 15, 25 and 75 ton Cap.
BELT: Conveyor: 14 In., 16 In., 18 In., 24 In., 30 In., 36 In., 40 In., 48 In., 60 In.
IDLERS:—36 In., 30 In., 24 In., 18 In., 16 In. and 14 In.
DRYERS: 42"x24', 5'x35', 60"x30', 68"x60'
HAMMERMILLS: 36x24, 24x18, No. 3, 4 & 6
SCREENS: Vibrating: Hummer 4x5 & 3x5
CARS: Dump: 1 Yd., 1½ Yd., 3 Yd., 12 Yd.
ENGINE: Diesel; 60 H.P. & 100 H.P. F-M. 170 KVA 3 P., 60 C., 2300 V. WORTHING DIESEL UNIT.

SPECIALS

3—4x30x½ Dryers or Kilns.
4x8 Robbins D. D. Vib. Screen.
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36—1000, 4000, 5000, 10,000, 25,000 55,000 & 80,000 Bbl. Cap. Field Tanks.

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22,000 Gal. Cap. on 100 Ft. Tower
40,000 Gal. Cap. on 106 Ft. Tower
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60,000 Gal. Cap. on 100 Ft. Tower
75,000 Gal. Cap. on 100 Ft. Tower
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THREE LOCOMOTIVES

One Lima, 20 tons, type 2-6-0, 100 lbs. steam pressure, cylinders 14 x 18; one Glover, 18 tons, type 0-6-0, 130 lbs. steam pressure, cylinders 12 x 18; one Manhattan, type 0-4-4, wagon top boiler, weight 15 tons, 125 lbs. steam pressure. All in running condition. Can be inspected our log camp near Cassia, Florida.

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Bucyrus Erie Model 1035, 1 yd. Shovel, gas
Bucyrus Erie 50B Steam Shovel, 2 yds.
Bucyrus GA2 Crane 50' boom.
Northwest Model 105 Gas Crane
Industrial Loco. Crane, 20 tons, steam
Ohio Loco. Crane, 22½ tons, electric

GOOD ITEMS

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Butler Concrete Plant, 350 tons, new 1941
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Hayward 2 yd. Clam. Rehandling Bucket
Hayward 1½ yd. Clam. Rehandling Bucket
Williams 1½ yd. Clam. Rehandling Bucket
Haiss ¾ yd. Clam. Rehandling Bucket
Erie ¾ yd. Clam. Rehandling Bucket
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Milwaukee 8 ton, std. gauge, gas locomotive.
Vulcan 6 ton Gas Locomotive, 36" ga.
10—Western Side Dump Cars, 20 yards.
10—Western Side Dump Cars, 30 yards.
3—30 ton standard gauge Flat Cars, rebuilt.
B.S. 10 ton, 3 wheel gas Roller
B.S. 10 ton, 3 wheel steam Roller
Huber 5 ton, 3 wheel gas Roller
Lidgerwood 3 drum Hoist, 80 HP with swinger
1—Stgel Stiff-leg Derrick, 15 tons cap., 100' boom
1—#7 McKiernan & Terry Pile Hammers
2—#5 McKiernan & Terry Pile Hammers
3—#3 McKiernan & Terry Pile Hammers
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4" Barnes gas Duplex Plunger Pump
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Rex Pumperete Outfits, Model 200, 190, 180, 160
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1 car 6x6—#2 and #1 Rough Green Pine	27.00 & 30.00

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New-Type Paper Protects Against Corrosion

A new greaseproof, noncorrosive paper has been announced by Sherman Paper Products Corp., Newton Upper Falls, Mass., to protect highly finished metal parts against corrosion. Called V-26, this protective wrapping paper is described as a new development in the packing of war materials, which eliminates multiple wrapping operations at point of use, thereby permitting substantial savings in time. The new product, which is reported to meet or surpass all government specifications for greaseproof, noncorrosive papers, was developed in conjunction with the armed services and war industries, and has been tested in aircraft, automotive, truck, tank, and other types of ordnance factories.

Multiple wrapping operations are eliminated by combining two protective laminations in one paper. The inner ply provides a greaseproof barrier for the retention of corrosion-preventives used on metal products, while a strong outer ply protects the greaseproof membrane against damage in transit. Both inner and outer laminations are noncorrosive, consisting of neutral kraft, colored red in accordance with government specifications for Grade A noncorrosive papers. Both are creped for greater flexibility in wrapping, with a dead-limp folding quality. The new line is available either with an outer film of wax that provides a self-sealing surface, or uncoated where the self-tack quality is not needed.

Invisible "Raincoat" Waterproofs Many Materials

An invisible "raincoat" which can be formed on cloth, paper and many other materials by exposing them to chemical vapors from a new compound, thereby making them water-repellent, has been developed in General Electric's Research Laboratory at Schenectady, N. Y., by Dr. Winton I. Patnode who is studying many possible uses of this new method of water-proofing.

Called Dri-Film by the G. E. Electronics Department which will market the new compound, one of its most important uses so far is the treatment of ceramic insulators for radio equipment being made for the armed forces of the United States. It is said to be about nine times more effective than wax used at present as a water repellent.

Dri-Film is a clear liquid composed of various chemicals which vaporize at a temperature below 100 C. Articles to be treated are exposed, in a closed cabinet, to the vapors for a few minutes. Then they are taken out and, if necessary are exposed to ammonia vapor. This is to neutralize corrosive acids which may collect during treatment.

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